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AEROSOL AGE

The magazine of pressure packaging

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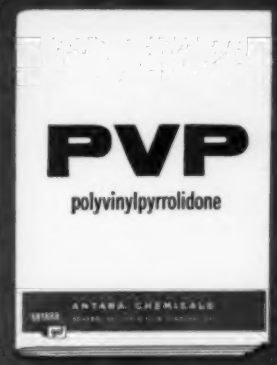

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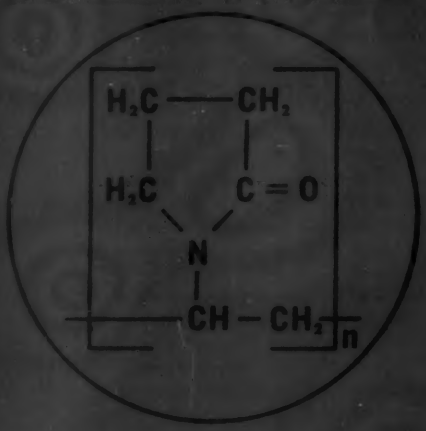

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EDITOR'S MAILBAG

To The Editor:

Recently we began subscribing to your excellent magazine, *Aerosol Age*. Because of the great deal of interest generated among our staff with each issue, we wonder if it would be possible for you to supply us with the back issues dating from May 1956. We have the May, 1956 issue and have been receiving issues regularly since June of 1957.

If it would be possible to supply us with these back copies of the magazine we will greatly appreciate it.

Lewis L. Otterson
SALES MANAGER
SPECIAL PRODUCTS DIVISION
BERNADIN BOTTLE CAP CO., INC.
Evansville, Ind.

Unfortunately, certain back issues of Aerosol Age have been in considerably heavier demand than others. For this reason certain issues (particularly for months in 1956) are no longer available. Those no longer in stock include May, August, November, and December of 1956; *and January and April of* 1957. *Requests for complete files of back copies can therefore, of necessity, no longer be filled.*

•

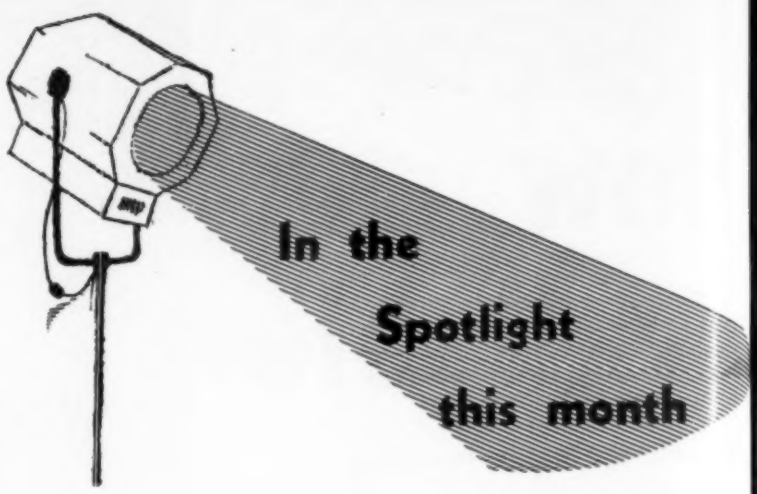
To The Editor:

The expression of one's own personal opinion is a basic right to which any individual is entitled. The *publication* of such personal opinions on subjects affecting the well-being of larger groups often leads to the institution of constructive corrective measures. To criticize, however, merely in order to have something to say, or because of a strictly personal "chip-on-the-shoulder" attitude can be extremely harmful, particularly if such criticism is circulated to many other individuals who are perhaps all too prone to accept what appears in a printed page as gospel.

Aerosol Age's European correspondent has, in the past, been very argumentative about certain aspects of business abroad, and at times has—with a "tongue-in-check" attitude—teased various groups about customs and established practices in the Old World. In the October report, Dr. Clark has put himself into a somewhat more unfortunate position.

He says "the resourcefulness with which intelligent Europeans can find a negative opposition to American ideas, products, plans, etc., is a never-ending source of wonderment." May it be perhaps that only Dr. Clark's ideas meet this resourceful opposition? Our own experience would lead us to say that the resourcefulness with which almost all Europeans *accept* and put to good use American ideas — despite the many, and in most cases necessary, restric-

(*Continued on Page* 47)



● **ART comes to Aerosol Package Design** . . . Professionalism takes over from amateurism in aerosol package design. Donrico, a leader in the new field, is discussed in a special staff article on page 12.

● **The Uncoated Glass Aerosol Controversy** . . . Jack Pickthall, in the first of a two-part series beginning on page 14, heaps new fuel on the uncoated glass aerosol controversy.

● **New Midget Aerosol Insecticide** . . . Fairfield researchers, working with more powerful formulations and metered valves, have come up with a smaller, more efficient package for insecticides. Details on page 17.

● **Pressurized Insect Repellents** . . . Dr. Carroll Smith, a leading USDA authority, describes a whole series of tests conducted to determine the efficiency of insect repellents. His article appears on page 18.

● **The Birch-Gattone Patent** . . . A patent, termed "basic" for internally-applied aerosols, comes in for a full discussion on page 20.

● **Early Norwegian Aerosols** . . . New information, gathered exclusively for **Aerosol Age** by Albert Edelstein, proves that workable, marketable aerosols go a lot farther back in time than previously realized. Story on page 24.

● **CSMA Lists Schedule Outline** . . . A basic meeting schedule is announced, on page 23, by the CSMA for its Hollywood Beach, Fla. convention, Dec. 9-12.

● **New Aerosol Pharmaceutical Development** . . . Homemakers' Products Co., a company new to the aerosol industry, comes up with a non-chilling fluorinated hydrocarbon aerosol for pharmaceutical use that could well open up vast new fields for aerosol dispensing. Story and pictures on page 33.

EDITORIALS

The Safety Problem Again . . .

A recent issue of *Consumer Bulletin*, a magazine that evaluates various products from the standpoint of use, efficiency, truth of advertising claims, etc., carried a brief article warning of possible dangers in use of aerosol containers (Aerosols in Review, page 32 of this issue). Held in proper perspective, the article isn't terribly earth-shaking. However, to the casual, and often highly impressionable reader of such consumer publications, this article could conceivably make him pause over his next aerosol purchase.

The article recounts, in what we think is probably overly lurid detail, the circumstances of two deaths caused by user carelessness with pressurized containers. The first occurred when a man, while burning trash in his back yard was hit by fragments from a bursting shave cream container, that had accidentally been placed in the fire. The fragments reportedly severed an artery and the man died.

The second death happened when a woman, holding a baby in her lap, was cleaning a bottle warmer with an aerosol rust remover. The liquid shot "in the wrong direction and sprayed into the baby's mouth," and the child later died.

The man in the first accident was plainly at fault, for, as do all aerosol containers, this one had a label that read: "Keep away from heat!" He was inviting disaster, just as he would have had he attempted to burn up a gallon jug partially full of gasoline, kerosene, or any other volatile, flammable fluid. Even an ordinary glass vinegar bottle that is tightly sealed and then placed in a flame can be dangerous, and every city boy knows that a well sealed empty milk carton will, when placed in certain position in a hot fire, explode with a substantial bang!

The second instance is probably more tragic because it resulted in the death of an innocent bystander. From *Consumer Bulletin's* account it would appear that the child's mother was almost solely to blame—and *not* the aerosol container. A good many of the products currently being packaged in aerosol containers, though not inherently "dangerous" in any sense of the word, will, if sprayed into the mouth in large quantities, cause injury to the tissue, and even death. In this category spot removers, paints, oven cleaners, industrial mold releases and lubricants, moth proofers, certain insecticides, and a large number of other products might be included. All of these are highly useful products, *despite* the fact that they might not prove compatible with the digestive system of a small baby!

The essential problem is not (as *Consumer Bulletin* implies) that there is any need for further regulations prohibiting the packaging in spray cans of "so toxic a material as the liquid involved in this instance." Any number of household products are inherently lethal (i.e., ammonia, iodine, lye), even to adults, yet they continue to be used safely and *sanely* in the home.

Rather the point to be stressed is that the "ease of use" afforded by an aerosol does *not* of itself convert an ordinary household substance — such as the rust remover in the case of the baby's death —into a more dangerous substance. The material sprayed is, in most cases, substantially the same as it is in the old glass jar or can, and the only qualifications need be made in its use. The mother in question would probably never dream of using a volatile spot remover close to her baby; and, by the same token, should not have used a rust remover where it might come in contact with any part of the baby's skin—let alone be permitted to enter the infant's mouth.

To the aerosol industry this magazine report would appear to indicate a possible regulatory threat from a new source—the unthinking, un-

(*Continued on Page* 49)

Art comes to...

Aerosol Package

UNTIL a few years ago the aerosol package was often decorated with an amateurishly designed label or lithograph, in many cases dashed off by the marketer himself. This marketer was often working against the time element, for there was a mad rush to be first on the market, or to corner one particular segment of the market.

However, for the past two or three years the design of the package has passed into the hands of artists, package engineers, and other professional designers — and the resulting packages show imagination, ingenuity, and flair.

Typical of this new breed of men in the aerosol field is Enrico Donati, founder and president of Donrico, Inc., New York, a company specializing in the creation of quality packaging for aerosol and non-aerosol fields. His designs, and those of his staff of five to seven artists, have found their way into the aerosol product lines of Revlon, Avon, Elizabeth Arden, Tilford, Christian Dior, Toni, and many other leading cosmetic and perfume houses. The distinctive gold label of Revlon's "Satin Set", (an early Donati aerosol design) is credited, along with the product's intensive television advertising campaign, with much of the impressive sales success of the hair spray.

Mr. Donati is quick to point out that his company does not take upon itself the oft requested task of "quickly designing a label", but instead designs with the entire package in mind — label, decorative enamel, overcap, and (if possible) even the can. In his words: "The entire package must be a blend of its various elements, the cap blending into the spirit of the label, the label with the shape of the can, and so forth."

"In the design of the aerosol package, we have been very much hampered by the fact that we must conform to the limited shape of the can. The only leeway we are permitted, in the great variety of can-packaged aerosols, is in the color of the can and overcap and, probably most important of all, of the label.

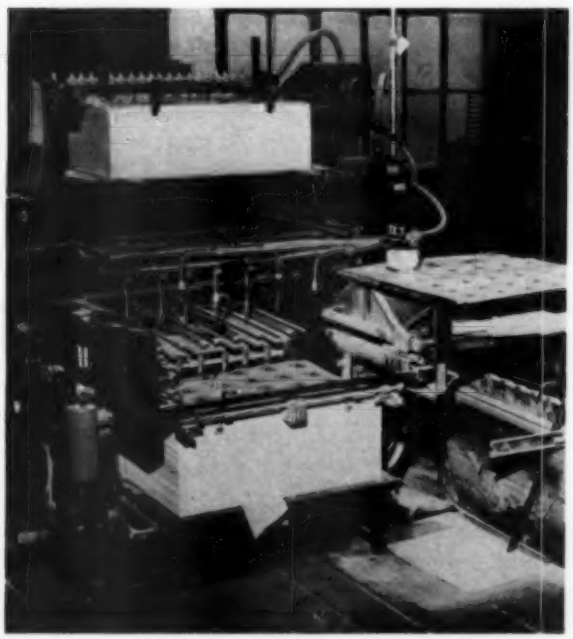
"Our principal task is to give the package a distinctivness, so that it won't be just another can in a display of, say, two dozen other cans of hair spray or any other product. Also, in the case of old established cosmetic houses, the standards of the regular product line must be maintained to keep a "family" feeling.

"The aerosol package is still in the throes of its birth, and we must compensate for its crudeness by covering up as much of it as possible. This is done mainly by putting labels and overcaps on cans, and a decorated folding carton around glass or plastic-coated glass containers."

ENRICO DONATI was born in Milan, Italy 48 years ago, and received his doctorate in Science in letters at Italy's University of Pavia. He studied music for several years, then switched to the study of art in Paris, and it was these studies that led him into the problem of reproduction of art, and, later, printing. Since coming to the U. S. in 1934, he has divided his time between pure art and the more commercial field of package design.

His company, which presently occupies three floors of a tall building on West 37th Street, at the edge of New York's garment district, was founded back in 1940, and has been growing in experience and equipment ever since. In addition to an impressive array of letterpress, offset, and gravure presses used to produce the labels, the company maintains such specialized equipment as a huge embosser, a bronzer, and thousands of dollars worth of other special equipment.

Many of Donrico's printing jobs require two or more processes, some



One of the chief presses used by Donrico is this 21" x 28" Heidelberg cylinder press. This is one of four of this type used by Donrico. A number of finished label sheets can be seen in the foreground.

Enrico Donati, in his office, with some of his native art collection.

Design

An Elizabeth Arden label designed by Donrico. The upper portion of the label is light blue, the bathers sporting a deep tan.

Sun Tan Lotion
AEROSOL
ARDENA SUNTAN LOTION FOR A SATIN TAN. PREVENTS HARMFUL SUNBURN. NON-GREASY, INVISIBLE, WATERPROOF.
DIRECTIONS
APPLY OVER ENTIRE SKIN BEFORE EXPOSURE. RENEW APPLICATION FREQUENTLY. INSTANTLY ABSORBED, NON-STICKY, WILL NOT COLLECT SAND. DO NOT USE NEAR EYES.
CAUTION: FLAMMABLE. DO NOT USE NEAR FIRE, FLAME
DO NOT PUNCTURE OR INCINERATE CAN, OR PLACE WHERE TEMPERATURE EXCEEDS 130° F.
Elizabeth Arden

especially complicated. For example, some of the boxes used for aerosol colognes require six separate printing operations, including the application of two levels of printed acetate to produce a raised effect. The firm, constantly experimenting to develop new effects and techniques, recently perfected a unique process for foil, called "Shimmerglo", which suggests depth and motion. (An example of this treatment is Tilford's new "Stay Put" aerosol hair spray wrap).

Mr. Donati points out that the principal challenge to the company is accurate translation of the artist's package design to the printed form. For aerosol labels, the mechanics of inks, glues, embossing, and other special processes must all enter into consideration in effecting this translation.

An early Donrico success, The "Satin Set" label is highly regarded in the package design field.

For hair sprays, for instance, the colors and inks must be alcohol-proof (because of possible spillage when the consumer uses the product) and at the same time they must be impervious to heat changes (since many labels are applied immediately after the containers emerge from the heat test tank). "Delamination" — chemical breakdown of the label veneer caused by solvents or alcohols in the product — is another problem to be solved.

DONRICO researchers have noted development of a definite trend away from the cold metallic feel of tinplate, and a good many of the firm's labels are on embossed fine paper stock (As in Toni's "Adorn" hair spray wrap) or textured foil (As in the "Satin Set" label) to insure that the consumer won't touch cold metal. The company also specializes in overcaps of unique sizes and shapes, which again add to the over-all illusion of distinctiveness for its packages.

In addition to his package design, Mr. Donati is an abstract painter of some repute. In fact, since 1942 he has had 17 one-man shows in America and in Europe, and has some of his work in the Museums of Modern Art in New York, Rome, and Milan, and in many of the leading collections in the world. The workers in his plant can't help being art conscious, for all over the walls of the company's three floors are hung scores of abstract paintings by the company's president and his many painter friends.

Of all the aerosol products for which he has had to design packages, Mr. Donati is most excited over the tremendous potential for pressurized colognes and perfumes. A world traveler himself, he says: "In the United States it is a common thing for a woman to apply perfume with her finger. In France, which is acknowledged to be the most advanced of any country in perfume technology and techniques, *no* woman ever puts on perfume with her finger.

(*Continued on Page* 49)

More On . . . .

The Uncoated-Glass

IN the *Soap, Perfumery, and Cosmetic Journal* for February 1957, I published an article under the heading "Unprotected Glass Aerosols." In this article I attempted to show that the safety of uncoated glass aerosols and normal beverage bottles could not be accurately compared by simple reference to the pressures involved. I further pointed out that, simply because a beverage bottle breaks more easily than an aerosol bottle, one cannot validly state that the aerosol bottle is a safer commodity in the hands of the public.

In the July *Aerosol Age*, Maria V. Wiener has criticized my conclusions and my article in general with some gusto. I have met Mrs. Wiener on several occasions and I hope that she will not read anything personal in my answer.

A considerable part of her paper is taken up with complicated mathematical formulae, which no doubt will of themselves command respect from many readers. By contrast, I feel that the situation might be clarified if I restate the purpose of my original paper in relatively simple terms; later I shall sum up my criticisms of Mrs. Wiener's article in several brief paragraphs.

A mistaken belief has arisen that one can judge the relative dangers of uncoated glass aerosol bottles and beverage bottles by simple reference to the pressures involved. Many people in the industry are deceived by this suggestion and have come to believe that, if a beverage has a pressure in the region of 60 psig and a glass aerosol a pressure of only 15-25 psig, then the latter obviously *must* be safer.

This completely false reasoning has been reinforced by writers who proved that beverage bottles broke more readily than uncoated glass aerosols. From these drop tests it was argued that, if beverage bottles were safe to sell to the public, then uncoated glass aerosols were even safer. As I pointed out in my article, the real question is rather: what happens when the bottles *do* break?

Drop tests made from a height of only four feet had shown that aerosol bottles broke at the rate of one in about 18 drops. Even if one were misguided enough to accept ease of breaking as the sole criterion of safety, I don't believe that the height used is sufficient to take into account the way in which the glass aerosol may eventually be handled (or perhaps I should say "mishandled").

IN my paper I attempted to give some theoretical and practical reasons why pressures in the two types of bottles were only a small part of the story. I was able to show that the conditions that exist in a beverage bottle and those in an aerosol bottle bear scant relation to one another. In my opinion, the photographs I took clearly proved all the points I was trying to make. I made no attempt to lay down a standard drop test, since my intention was rather to demonstrate all that might happen when, let us say, a housewife drops an uncoated glass aerosol onto a bathroom floor.

The conditions of my test *were* quite realistic and it matters little whether the temperature was 19°C. or 21°C. (As a matter of interest, all my drop tests were conducted at 20°C.) The bottles chosen were normal, commercially-available containers such as may be purchased at any drug store; and were, in fact, of American origin. For the purpose of my article the drop test mechanism is of no real significance — so long as it drops the bottle — and I am afraid that Mrs. Wiener's arguments against the shortcomings of my drop-test data have no real bearing on the validity of my findings. Also, complicated mathematics and formulae were given little space in my paper, the simple calculations employed being designed to indicate the vastly different set of conditions that exist when aerosol and beverage bottles break.

By simple calculations I showed the total volume of gas which theoretically could be developed from 25 grams of a given propellant. I then went to great pains to point out that this amount would not, in practice, be developed due to heat losses. I suggested that the amount of gas may, in fact, be reduced by as much as 40%. Since it is utterly impossible to forecast the exact conditions of the explosion, I am quite happy with my estimate — which will certainly be nearer to the actual figure than is Mrs. Wiener's theoretical suggestion. I next proceeded to calculate the total amount of carbon dioxide which would be available in a seven-ounce bottle of mineral water at 60 psig. Further, I showed that the available carbon dioxide develops too slowly to produce an explosion.

Probably simple reference to some of Mrs. Wiener's remarks would have constituted a sufficiently good answer to her whole article, but I feel duty bound to reply rather fully — especially to the many English readers who may not have seen the *Aerosol Age* article in its entirety.

Mrs. Wiener commences her article by writing that "a number of research workers in American laboratories disagree with Mr. Pickthall's findings and rightfully so!" This can be countered by saying that a number of research workers agree with *my* findings, and rightly so. I also have strong evidence that many America

Aerosol Controversy

By Jack Pickthall, F.R.I.C.
Chief Chemist, Polak & Schwarz (England) Ltd.
Enfield (Middlesex), England

research workers agree with my findings and that many U.S. contract loaders will not handle uncoated glass aerosols.

Mrs. Wiener constantly jibes at the word "explosion" and uses it only in quotes — or cloaks it in more homely terms. Believe me, we *are* dealing with explosions!

I am also taken to task for my supposition that the halogenated hydrocarbon propellants are ideal gases. We were well aware of this fact and believe that it must be abundantly clear why and how our calculations were made.

AT the outset, perhaps another point should be cleared up. I gave, as the volume of my bottle, the amount of 56 cc's and used this as the initial volume on which to base increased volume ratios. Mrs. Wiener names a volume of 65 cc's for her container and uses this as her divisor. Obviously, she is entitled to use whichever volume she wishes; but she must then bring it to the attention of readers that my own figures must be decreased by a factor of 56/65. These cannot be used interchangeably. When I wrote my article, I deliberately chose the volume of the bottle so as to avoid criticism of the more dramatic approach.

At one point Mrs. Wiener writes about the effects which alcohol has on the vapor pressure of a mixture of alcohol and propellant. This is illustrated by a graph, which, in my opinion, isn't at all pertinent. The impressive slope to curve "a" is for a propellant not even discussed in her paper. The second curve "b" shows only that the pressure rises some one or two pounds per square inch (when increasing the propellant content from 36 to 50%) and the temperature quoted for this particular example is 78°F.

Up to this point Mrs. Wiener has set out to prove that the amount of gas available for flashing should be reduced by a figure in excess of the 40% I have suggested. She has made two calculations, one suggesting the reduction should be 87.8% and the second, a reduction of 61.7%. Now, factors concerned in making a calculation of this kind are so involved and so impossible to produce that I am not at all disturbed by Mrs. Wiener's use of the word "guesstimate"; and it would indeed be difficult to decide which of our figures is nearer to reality.

My original article described the explosion as *substantially* adiabatic, and then goes on to say that a truly adiabatic explosion would give a very much lower figure owing to the heat content reducing the evaporation. The estimate of reducing the final explosion by as much as 40% is the writer's opinion of how nearly the actual explosion would approach the theoretical possibility. The calculations by Mrs. Wiener pertain to an entirely theoretical state of affairs which can never be achieved in practice; and in the actual example we considered (namely, the explosion of a glass aerosol bottle) extra heat would enter the system from the glass of the bottle and, of course, even from the surface on which the liquid splashes. On point of fact, the practical figure *must* be greater than the theoretical, and it is very much more possible that our estimate is nearer to reality than Mrs. Wiener's theoretical assumption.

Mrs. Wiener says that "The assumption that heat transfer from alcohol to propellant takes place without resistance and with no delay is not realistic." It should be pointed out that we are dealing with two miscible liquids (i.e., according to thermodynamic theory, this mixture consists of two types of molecules moving at high velocities and colliding very many times a second, transferring energy — heat — at each collision). Thus heat transfer is necessarily taking place between the molecules all the time without resistance. *The assumption is therefore not only realistic but basic.*

She goes on to suggest that "cohesion forces (similar to those exerted on carbon dioxide by water) also retard the escape of propellant." This comparison is not valid since, in the first place, carbon dioxide *can* actually react with water to form carbonic acid, but no propellant/alcohol chemical compound exists. Secondly the surface tension of alcohol is less than a third the surface tension of water and hence the energy required to form bubbles in alcohol is greatly reduced. Thirdly, there are 309 molecules of water to each carbon dioxide molecule in the beverage solution, whereas there are only 3.7 molecules of alcohol to each propellant molecule in the aerosol mixture.

It is therefore likely that the cohesive forces for the propellant/alcohol solution are at least two orders of magnitude less than for the carbon dioxide/water solution and are therefore very small. "Figure 1" in Mrs. Wiener's article shows that the vapor pressure of the 50% mixture of alcohol and propellant is higher than that calculated from Raoult's Law (which assumes zero cohesive forces), thus indicating that the cohesive forces are negative rather than positive. From this it can be seen that (from purely theoretical considerations) Mrs. Wiener's figure of 38.3% for the percentage of evaporating propellant during flashing will

be fairly accurate; certainly much more accurate than her figure of 12.2%. However, as previously stated, even the figure of 38.3 will most certainly be on the low side when other considerations are taken into account.

Figure 2, of Mrs. Wiener's article, is worth discussing. This graph shows that the rate of evaporation of propellant decreases with increasing percentage of alcohol. No data on the way these curves were obtained is given and no time scale is included. The change in the initial slope of these curves shows only that the rate of diffusion of propellant in the liquid mixture is not infinite — a not unexpected result. It does mean, of course, that the explosion requires a finite interval of time during which the propellant is evaporating and expanding.

The criticism voiced about my making "few" attempts to find the explosive force exerted on glass fragments was unjust. I wonder how many laboratories are equipped to undertake such an experiment? However, she goes on to show how the total work of expansion can be figured by the laws of thermodynamics to establish an index of the available explosive force. The calculations are based on a formula easily derived from the expansion laws for the adiabatic expansion of a gas or vapor in which the pressure P is related to the volume V by the equation:

$P\ V^K = \text{constant}$. Where K = ratio of specific heats of the gas.

This formula is applied to the gas-liquid mixture (the volume ratio of the gas + liquid before and after flashing is used). But for a two phase (gas and liquid) system the law does not apply, the pressure being independent of the volume, changing only with the temperature of the system. *The calculation therefore cannot be applied to the system under discussion.*

In any case, unless the available energy is related in some way to the final velocity of the glass particles, its significance is not apparent. We therefore calculated the velocity of the glass particles resulting from this explosion.

WE now leave the complicated fields of mathematics and take up what might be called "General Comments." Mrs. Wiener says that the formulations used in my paper are "*not* appropriate for that type of container, and certainly not in line with comparable American products." She further says that "Our recommended formulations for uncoated glass aerosols do not exceed the pressure of 15 psig at 70°F., nor do they contain any more than 36% propellant by weight. This means that the results of the English tests can neither be accurately related to American marketed uncoated glass aerosols, nor to the literature describing them." I presume that when Mrs. Wiener says "Our recommended formulations" she is referring to those of her own company and of course, I cannot comment on her figures, but accept them without question. If the readers of Mrs. Wiener's article had not read my original paper, they might well have thought that her figure of a maximum of 15 psig was lower than my figure. My own figure was, in fact, 13 psig. Let me say again why my two fillings were selected. Formula (a) 50% by weight of tetrafluorodichloroethane and 50% of alcohol (96%) was used as this formula gives an acceptable spray at only 13 psig and despite what Mrs. Wiener says, has been quoted in the literature for low-pressure products. Formula (b) was selected in the higher pressure range because the beverage bottle story did not even specify the nature of the aerosol filling; it left people with the idea that pressure alone was the thing to consider when speaking of dangers in beverage and aerosol bottles.

We realize that it is possible to use an amount of tetrafluorodichloroethane lower than the 50% we used. Special valves and the introduction of a third component (for instance, water) will increase the efficiency of the spray. However, these points have *not* been mentioned in the statements suggesting that beverage bottles are more dangerous than aerosol bottles. A simple reference to the literature on spray patterns indicates that at least 50% of tetrafluorodichloroethane is required when 95% alcohol is used and even more when pure alcohol is employed. My whole point is that many people have been given an entirely false impression by the very simple reference to beverage bottles and aerosol bottles.

The second filling was 40% propellant mixture (30% tetrafluorodichloroethane, 10% difluorodichloromethane) and 60% of alcohol (96%). The formula on which Mrs. Wiener has concentrated her attack is the first one, so let us see how it differs from what she says is in line with American products. (See Chart)

	Formula "a" from my paper.	Suggested American formula.
Tetrafluorodichloroethane	50%	
Alcohol 96%	50%	
Propellant (not defined)		Maximum 36%
Pressure	At 20°C. 13 psig	At 21.2°C. Maximum 15 psig

Now let us review the suggestion that 50% of tetrafluorodichloroethane has not been used in the literature. Immediately after I read Mrs. Wiener's paper I wrote to a friend in America asking simply for a check on the generally accepted formulae for colognes to be used in uncoated glass aerosols. His figures were:

Perfume	2- 3%
Alcohol	22-48%
Tetrafluorodichloroethane	50-75%

There exists a well known U.S. patent specification which makes claims on specific fillings for low-pressure aerosols and which are specially designed to be used in uncoated glass aerosol bottles. It can be seen from this patent that up to 35% *by volume* of a given propellant or propellant mixture may be used in conjunction with certain alcohols. This means that as much as 50% *by weight* of

(*Continued on Page* 52)

Fairfield Announces . . . .

New Midget Aerosol Insecticide

A FORMULA for a midget insecticide aerosol containing only two ounces of highly concentrated active ingredients, but having the performance equivalent to that of a high quality, non-toxic 12-ounce unit, has been announced by the Fairfield Chemical Division, Food Machinery and Chemical Corp., New York.

The "Pyrenone Midget," which can be offered the consumer in the one dollar range, utilizes improved "Pyrenone" concentrates containing pyrethrins and piperonyl butoxide in a concentration six times that used in the normal 12-ounce unit. However, through the use of a metered valve, the expelled spray is reduced to precisely one-sixth of the particles usually dispersed in the larger unit.

Comprehensive tests and Peet-Grady evaluations have proven that by increasing the amount of active ingredients of each dispensed particle, equivalent biological performance is attained. Certain active ingredients, though, require proportionate use of solvents which would automatically necessitate a larger container. Due to the inherent characteristics of improved "Pyrenone," such additional solvents are unnecessary.

While the midget aerosol dispenses only one-sixth the amount of spray as the 12-ounce unit, comparative tests repeatedly show equal knockdown and kill. The "Pyrenone Midget" used in these tests contained 1.2% pyrethrins, 6.00% piperonyl butoxide, 12.80% petroleum distillate and 80.00% inert ingredients. This was tested against a formula for a 12 ounce unit having 0.20% pyrethrins, 1.0% piperonyl butoxide, 18.80% petroleum distillate and 80.00% inert ingredients.

It has furthermore been proven that the "Pyrenone Midget" actually outlasts the 12-ounce unit when the latter is used in the usual "hunt and chase" method. For example, each pressure on the midget's button releases about 100 milligrams of spray. At the rate of one pressure of the button per second, the "Pyrenone Midget" did not become exhausted until after 560 seconds, while constant spraying with the 12-ounce unit exhausted its contents in 340 seconds.

Although the smaller unit will, as indicated, require more concentrated active ingredients, manufacturing costs per unit are considerably less than a high quality 12-ounce unit.

Material costs are obviously lower, since much less inert ingredients and petroleum distillate are necessary for the "Pyrenone Midget." Filling time is faster, which lowers filling costs per unit. Another advantage to the manufacturer is the radical reduction in warehouse and shipping space and transportation costs. Retailers will need less shelf space and can utilize more effective "point of sale" displays.

Much easier to handle, carry, use and store, "Pyrenone Midgets," equivalent in effectiveness to the 12-ounce unit, are expected to broaden existing markets and expand new outlets for the aerosol industry. Instead of "get by" formulas usually needed for the mass trade, it is now possible to offer a top quality, non-toxic, true aerosol, effective against resistant and non-resistant insects, at a popular price.

Another improvement over previous formulations — with the use of improved "Pyrenone," staining characteristics normally associated with high concentrations of pyrethrum can be avoided.

In accordance with established

(*Continued on Page* 47)

Low-Pressure Aerosol Insect Repellents

by Dr. Carroll N. Smith
Entomology Research Division
Agricultural Research Service, U.S.D.A.
Orlando, Fla.

THE convenience of low-pressure aerosols for the dispersal of insecticides suggests their use in the application of insect repellents. How satisfactory are they for this purpose? The following information, gathered over a period of years at the Orlando laboratory, provides an answer to that question, based on tests with various compounds against mosquitoes, chiggers, ticks and fleas.

In general, repellent aerosols find their greatest usefulness in treating the clothing of persons who are occasionally exposed to insect attack. They are also satisfactory for applying repellents to the skin. When the same repellent can be used on both skin and clothing, the single package provided by a pressurized container is especially convenient. A few such products are now on the market.

For applying repellents, true aerosols theoretically should be less desirable than pressurized sprays (which have larger droplets) since the spray must impinge on the skin or clothing — not drift away in the air. Both these types of pressurized formulations were included in our studies.

The efficiency of aerosols and pressurized sprays in protecting the individual from insect attack was determined by testing them in comparison with the older methods of application. In each test the amount of aerosol or pressurized spray used to treat a subject's skin or clothing was determined by weighing the container before and after treatment, and the amount of active ingredient dispersed was computed. An equal amount of the same ingredient in liquid form was applied to another subject, and the two treatments were tested concurrently. The repellents in liquid form were applied to the skin by spreading them with the hands over the surface to be protected. They were applied to the clothing by saturating it with acetone solutions and allowing it to dry before it was worn in the test.

THE first experiments were made with true aerosols for the treatment of the clothing only. Aerosols and acetone solutions gave almost identical results in laboratory tests against yellow fever mosquitoes, lone star tick nymphs, and cat fleas with stockings treated with Indalone at 2.1 grams per square foot, 2-butyl-2-ethyl-1,3-propanediol at 2 grams, ethyl *beta*-phenyl-hydracrylate at 2.7 grams, and dimethyl carbate at 2.4 grams, but at 3 grams the last was effective 26 days when applied in an aerosol and 19 days in an acetone solution. In field tests against nymphs and adults of the lone star tick, army fatigue uniforms treated with aerosols of dimethyl carbate at 1.6 grams per square foot, ethyl *beta*-phenylhydracrylate at 1.5 grams, and 2-butyl-2-ethyl-1,3-propanediol at 0.5 gram gave as much protection through 3 weeks of aging as uniforms treated with acetone solutions at 2.0 grams, but Indalone in an aerosol at 1.4 grams was much less effective than in acetone solution.

Sleeves treated with aerosols of benzyl or diphenyl carbonate at 0.8 gram per square foot gave complete protection against chiggers (after one or two washings in hot soapy water) whereas sleeves treated with acetone solutions withstood more than three washings. These are acaricides, not true repellents, although they serve the same purpose. They are not now recommended for general use on clothing because of the irritation or sensitization they sometimes cause.

Recently our investigations with aerosols and pressurized sprays have been concerned primarily with the application of diethyl toluamide to the skin as well as the clothing. Tests against mosquitoes and ticks were made with aerosols containing 5 to 30% of diethyltoluamide, and pressurized sprays containing 15 to 30% in mixtures of Propellant 11 and 12. Some of the pressurized-spray bombs had regular valves; others had valves that produced coarser droplets.

Tests were made against yellow fever mosquitoes in the laboratory with treated stockings, and against lone star ticks in the field with treated fatigue uniforms. Stockings treated with 3.3 grams of diethyl toluamide per square foot gave complete protection through an average of 47 days of aging (not wear) when treated with an acetone solution, 59 days with a 5% aerosol, and 90 days with a 10% aerosol. Against ticks, uniforms treated with two grams of diethyl toluamide per square foot in an aerosol, a regular pressurized spray, a coarse pressurized spray, and an acetone solution were all about equally effective, giving 91 to 95% protection during the first three weeks of aging, and 80 to 88% during the next two weeks.

TESTS of applications to the skin for protection against mosquitoes were made with yellow fever mosquitoes in the laboratory, and with salt-marsh mosquitoes in the field. The aerosols and pressurized sprays were applied at the rate of 0.5 gram of diethyl toluamide per forearm and were compared with a 50% ethanol solution applied at the same rate from a dropper and spread with the hand. The arms were exposed to caged yellow fever mosquitoes for three minutes every half-hour, or continually to natural infestations of

(*Continued on Page* 53)

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We will answer your questions on

Aerosol Formulations

As the pioneer formulator of insecticidal aerosols, we have assembled valuable information which could be of interest to every present and future manufacturer of aerosols.

If you have specific questions on the latest developments of formulations and ingredients for household specialty and insecticidal aerosols, our research department personnel will do their best to answer them.

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● We would like to have the answers to the list of questions attached.

*Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

The Birch-Gattone

IN THE recent Pharmaceutical Symposium at the Philadelphia College of Pharmacy and Science, there was much discussion of possible patent considerations for future pharmaceutical application of pressurized products. In fact, one of the speakers, Robert A. Foresman Jr., warned in his paper that "certain broad-scope patents (such as the 'Rise' foam patent) must be considered."

Under the heading of "broad-scope patents" in the pharmaceutical field, there should probably be included U. S. Patent No. 2,788,784, issued April 16, 1957 to Herbert M. Birch and Daniel H. Gattone. This important patent covers a pressurized container, with a manually-operated valve staked in the container, "said valve having a valve stem adapted to couple to any suitable means for administering medicaments to a body cavity for inhalation from the pressurized disposable (or throw-away) container." It should be noted that this particular patent does *not* relate in any way to topical (or exterior) aerosol application, but rather relates specifically to body cavity projection.

According to the holders of the patent (which has been assigned to the Pressurized Packaging Division, Birch & Gattone, Inc., Munsey Building, Washington 4, D.C.) this patent and the following continuations-in-part cases, U.S. and foreign, are available on a "reasonable royalty basis calculated to aid and promote this newest advance in administering pharmaceuticals by the push-button system into body cavities."

In conjunction with this basic patent, which is also registered or applied for in a number of foreign countries, there are a number of improvements and continuation-in-part applications. These, according to Messrs. Birch and Gattone, thoroughly cover the administering (from small aerosol containers) of medicaments in the form of liquids, gases, or micronized powders and the like with many forms of special applicators adapted for administering or treating *any* body cavity, such as the nose, throat, rectum, vagina, and every conceivable body cavity of *human* or *animal* requiring special treatment.

Mr. Birch declares that "In the broadest interpretation of the broadest claims of these cases, aerosol projection of any liquid or non-liquid medicament, powder, gas or combinations thereof, by a manually controlled valve (either metered or unmetered) is covered." He further states: "These continuing cases in most instances are to be temporarily withheld from issue pending the decision of the board of directors as to the foreign policy of the Birch and Gattone corporation."

Furthermore, the projection of micronized powders by aerosol means is also included in the Birch and Gattone patents, at least as they apply to micron size for inhalation, etc.

AT PRESENT the licensing of the pharmaceutical provision of the patent is confidential, because of the confidential relationship between Birch and Gattone and certain of the leading pharmaceutical houses. However, Mr. Birch has divulged that one phase of this patent (now licensed to The Lif-o-gen Corp. of Philadelphia, relates to administering gases from a pressurized container to an oral or nasal cavity for inhalation. Any licensing in this phase, he advises, should be by direct contact with the Lif-o-gen Corp., c/o Butcher & Sherrard, 1500 Walnut Street, Philadelphia.

The holders of the patent have both had experience in the field of inhalation therapy and Daniel H. Gattone, president of Birch and Gattone and co-inventor, has been a student of medication administering systems by aerosol methods for many years. His entire life's work has been devoted to various phases of inhalation therapy. Mr. Birch is an attorney.

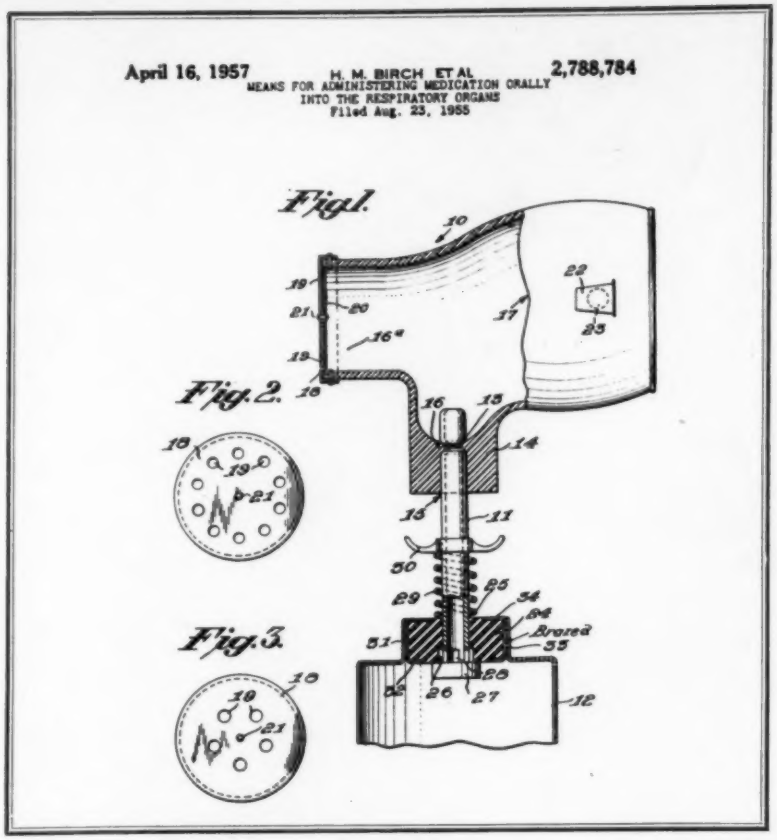
In conclusion, it should be pointed out that the Birch and Gattone patent apparently covers the combination of a pressurized container, any suitable metered or unmetered manually-controlled valve, and any suitable pressurizing medium with a suitable administering means coupled to the valve. These basically are the elements claimed (in combination) for providing projection of pharmaceuticals into a body cavity.

The text of the original patent is as follows:

2,788,784
MEANS FOR ADMINISTERING MEDICATION ORALLY INTO THE RESPIRATORY ORGANS
Herbert M. Birch, Bethesda, Md., and Daniel H. Gattone, Drexel Hill, Pa.
Application August 23, 1955, Serial No. 530,072
6 Claims. (Cl. 128—201)

The present invention relates generally to means for administering medication

Patent



orally by way of the respiratory organs.

Many forms of diseases, ailments and conditions of the human body have been discovered by the medical profession to be more effectively treated by respiratory means, that is, by inhalation of medicaments into the lungs and interconnecting respiratory tracts. However, heretofore all apparatus for such administrations have been extremely bulky and of such formation as to inhibit portability in a small hand bag or the like, whereby availability is always assured for emergency use.

It is an object of this invention to provide a small pocket size apparatus for administering gaseous medicaments, such as oxygen, micronized powdered antibiotics, and other pressurized medicaments from a small disposable container.

Another object is to provide in combination an oral nasal mask having a demand type air intake valve to permit predetermined air intake during inhalations and exhalation valves to release carbon dioxide during exhalations, with a pocket size pressurized container having a discharge nozzle formed with coupling means for quick-detachable connection with the mask inlet connection.

A further object is to provide a pocket size medicament administering apparatus formed with self-administering valve controlling means.

A further object of the invention is for administering medicinal oxygen to cardiac patients, asthmatics and for reviving greatly fatigued operators of motor vehicles, aircraft and the like. Also, all public conveyances, such as boats, trains, busses and aircraft will carry these handy dispenser units to revive passengers who may become in need thereof.

With these and other objects in view, the invention consists in the construction, arrangement and combination of parts hereinafter described and particularly pointed out in the claims, it being understood that we do not intend to limit ourselves to the details of construction.

In the drawings like parts throughout the several views are given like numerals and are thus identified in the following detailed description:

Figure 1 is a cross section view of one complete unit constructed according to the present invention;

Figure 2 is a front elevation view of one form of inhalation valve;

Figure 3 is a second form of inhalation valve.

Referring to the drawing, Figure 1 discloses an oral nasal mask 10 attached to an outlet tube 11 of a container 12 containing any suitable or desired pressurized medicaments, such as micronized antibiotics or such as oxygen, for example. The tube 11 is formed with a coupling portion such as the annular groove 13, which friction snap fits within the bore 15 of the mask inlet nipple 14. The bore 15 is integrally formed with an annular ring 16, which snaps into the groove 13 of tube 11 in a fluid tight seal with the outlet end of the tube extending slightly into the mask interior below and between the mask air intake portion 16a and the air and medicament breather and outlet chamber 17.

The intake portion 16a is tubular in formation and is capped by a plate 18 formed with intake openings 19. These openings are normally closed by a demand type disk valve 20 formed of flexible material and secured centrally by means, such as a bolt 21, extending through the cap plate and valve disc. Inhalation by a user of the mask draws the disc inward and away from the openings 19 and admits air into the mask chamber 17. Simultaneously with each inhalation the mask user momentarily depresses or moves the tube 11 to release a predetermined quantity of medicament. If oxygen, for example, a movement of the tube for a time duration equal to an average inhalation period is calibrated to discharge preferably ten litres of oxygen into the mask and the mask user takes the mixture into his respiratory system. When the mask user exhales, the exhalation valves 22 on each side of the mask over mask exhaust ports 23 open and release carbon dioxide during exhalation.

The container 12 is made to withstand high internal pressures and is sealed at the top center by a novel valve arrangement comprising a rubber grommet 24 formed with a center aperture 25 with a slightly enlarged or counter bore 26, said counter bore positioned within the container. The outlet tube 11 is formed with a valve head 27, which is seated against the under surface of the grommet 24 over the counter bore 26 inside the container 12. Above the head 27 the tube 11 is formed with openings 28. The valve head 27 is held seated either by the pressure within the container 12 or by the expansive action of the coil spring 29 compressed between the top of the grommet 24 and the under surface of the valve operator 30 fixed to the medial part of the tube 11.

The rubber grommet 24 is encircled with a metal ring 31 having a flange 32 and is preferably molded or vulcanized within this ring, while the exterior of the ring 31 is brazed into the interior bore of the container neck 33. This neck 33 is turned over the upper surface of the grommet 24 to form pressure sealing flange 34. This arrangement will withstand pressure ranges up to 150 pounds per square inch.

The tube 11 is preferably sealed by molding or vulcanizing thereof in the bore of the grommet 24. Thus, there is a positive seal between the tube and the grommet. To actuate the valve, the tube may be tilted in the yieldable grommet material or it may be depressed in the yieldable grommet to displace the valve head 27 from its seated position on the peripheral surface of the grommet over the bore 26 and thereby expose the outlet opening 28 above the valve head.

The operation of the apparatus hereinbefore described is believed generally ap-

(*Continued on Page* 54)

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MANUFACTURERS OF CLOSURES, CONTAINERS AND MACHINERY

Sunday, December 8
Registration Starts—Afternoon Get-Together—6:00 P.M.
Monday, December 9
Morning 9:00 A.M.-12:30 P.M.
Board of Governors
Division Administrative Committees
General Committees
Afternoon
Committee Meetings as requested (Several have been requested)
3:00 P.M.-5:00 P.M.
Evening
Special Features
Tuesday, December 10
Morning 9:00 A.M.-12:30 P.M.
Automotive Division
Disinfectant and Sanitizers Division
Insecticide Division
Waxes and Floor Finishes Division
Committees of Following Divisions—
Aerosol Division
Soap, Detergent and Sanitary Chemical Products Division
General Luncheon 12:30 P.M.-2:30 P. M.
Afternoon
Committee Meetings as requested (Several have been requested)
3:00 P.M.-5:00 P. M.
Evening
"Open House" General Party
Wednesday, December 11
Morning 9:00 A.M.-12:30 P. M.
Aerosol Division
Soap, Detergents and Sanitary Chemical Products Division
Committees of the following Divisions—
Automotive Division
Disinfectant and Sanitizers Division
Insecticide Division
Waxes and Floor Finishes Division
Afternoon
Committee Meetings as requested
Automotive Division (tentative meeting) 3:00 P.M.-5:00 P. M.
Evening
Special Feature
Thursday, December 12
Morning 9:00 A.M.-12:30 P.M.
Board of Governors 9-10 A.M.
General Session 10:15 A.M.-12:30 P.M.
Afternoon
Committee Meetings—As requested
Evening
Grand Closing Banquet

CSMA Lists Basic Convention Schedule

ADVANCE registration figures have risen way over the 900 mark as final preparations are completed for the 44th annual meeting of the Chemical Specialties Manufacturers Association at the Hollywood Beach Hotel, Hollywood Beach, Fla., Dec. 9-12. The basic program schedule, released late in September, has the important meeting of the Aerosol Division slated for the morning of Wednesday, Dec. 11.

Presentation of the aerosol package awards will take place at the general luncheon on Tuesday, and there will be a special display of all aerosol containers entered in the contest. Also at the convention will be the CSMA booth that was shown at the Dept. of Commerce building in Washington last month.

Oslo Newspaper Article Throws New Light on Early Norwegian Aerosol Research in the 1930's

by Albert Edelstein
Synchro-Mist Controls Inc.
New York, New York

ADDITIONAL light was thrown on the career of Erik Rotheim, Norwegian aeosol pioneer, and his contemporaries as the result of two separate articles appearing recently in *The Day's Echo,* a leading Oslo newspaper.

The *Day's Echo* actually began the discussion of the life of Mr. Rotheim by reprinting the *Aerosol Age* article (by Albert Edelstein, president of Synchro-Mist Controls, Inc., New York, in the March, 1957 issue). The *Echo's* account includes, as did the *Aerosol Age* article, mention of the fact that the Rotheim family derived only meager profit from the engineer's patents.

In fact, the *Echo* article suggests: "There is much to indicate that the family should have had millions of dollars. Some people talk about a second Norwegian 'Hannevig Affair.'" The Hannevig Affair refers to a claim, dating back to World War I and still pending, in the amount of $9 million. It had to do with appropriation of some ships belonging to a Norwegian firm called Hannevig.

A few days after the original article another article on the subject was sent *the Echo* by H. Frode Mortensen, a former partner of the late Mr. Rotheih. His article follows:

My concern with the spray business (aerosols) goes back to October 1925, at which time a newly-graduated chemical engineer came to see me in my capacity as a precision mechanic. This engineer, Erik Rotheim, was the son of the senior Erik Rotheim, the automobile engineer, with whom I had been in contact since 1907. If I am not mistaken, he taught King Haakon to drive a car.

Rotheim and I worked together and, after long years of experimenting and of testing the method we finally entered into an agreement with a company which was

Erik Rotheim

going to exploit the invention commercially. However, conflicts arose about various matters within the company's administration, and the company was declared bankrupt in 1935. However, this declaration of bankruptcy was declared null and void by the Norwegian Supreme Court on June 27, 1936.

But there the whole matter hit a snag, and in the fall of 1936 I formed a company on the method under the title of The Morton System, Inc. This company manufactured the spray packages (called flasks) and the valves and also filled them with different substances: floor and furniture polishes, insecticides, clear and colored lacquers, ski lacquers, DuPont mudguard lacquer for cars, and a number of other substances. Among other things, ski-glue, manufactured by Arnfin Refsdal, was packaged and distributed on the market in 1937-1939.

In fact, General Olaf Helset used this ski-glue in the Mjoll Mountains for several ski companies under his command, and several ski-glue and ski-lac packages were sent also to Lahtis, Finland, and to Lake Placid, in the U.S. Switzerland bought some containers from Slazengers of England and from the U.S. we had an order for 20,000 packages of ski-glue (which we never *were* able to fill because of our very small capacity).

Besides the aforementioned articles, we manufactured "Pang" a bed-bug killer that exterminated these vermin in a couple of hours. It was not necessary to remove furniture and other fixtures, but the windows and doors were simply closed immediately after the spraying was completed. Then, a few hours later, the room could be reopened and the bedbugs simply swept up.

Some 12,000 to 15,000 of these products were manufactured, and the firm of Fred. Hveding had some in stock from as far back as 1939. M. A. Ericksen bought eight boxes from the firm in 1952 and has used them to keep his apartment free from moths and other insects for the past five years.

In conclusion, I wish to emphasize two points. (1) That I took out a patent on valve construction in *my own* name, and (2) that the Oslo Health Council has not been able to exterminate bed bugs in an apartment near Torshov (in Oslo), even after repeated sprayings of gas. "Pang" solved the problem in a couple of hours.

Accompanying Mr. Mortensen's letter were two additional letters. The first, from the Martinius Eriksen mentioned in Mr. Mortensen's letter, follows:

In the spring of 1952 I bought eight steel spraying flasks, made by the Morton System, in Fredr. Hveding's paints and colors shop, Kirkegaten 3, Oslo. Four of these were moth killers and the remaining four insecticide.

I have since used all these spray-flasks to keep my own and others' apartments free from moths and flies for five years. The contents of the eight Morton flasks could be used right to the last drop.

Another letter, signed by Andr. Hiorth, an engineer, of Holtegaten 30, Oslo, follows:

During 1938 and 1939 I cooperated with the Morton corporation on various products which were used in Morton spraying flasks, including moth killer and floor and furniture polish. These flasks were made in Frode Mortensen's workshop in Falbesgate 18, Oslo, where the filling also took place.

I have seen tested the Morton flasks which M. A. Eriksen bought in Hveding's paintshop, and all of them appeared to be in the same condition as when they were manufactured (at the latest—1939).

The fact that these spraying flasks have kept absolutely intact during the period of at least 15 years is due, not only to the first class electrical welding, but above all to the particularly fine valve, which is Frode Mortensen's invention and construction.★

Beauty Curl, a product of Richard Hudnut, Morris Plains, N. J., was introduced recently with some of the splashiest advertising fanfare in aerosol history. Equipped with an Aerosol Research valve and selling for $1.65 plus tax, the product is said to be the only spray set that works without alcohol.

Foaming Clearex Window Spray, a product of Krylon, Inc., Norristown, Pa., is another entry into the window spray field. Sold in 15-ounce containers, the product may be used on glass, appliances, mirrors, chrome or tile surfaces.

Sprayway Glass Cleaner is currently being introduced in selected markets by Sprayway, Inc., of Chicago. It is packed in 12-14 ounce containers which were designed and manufactured by Continental Can Co. Girl in the photo is Jeannie Beacham, "Miss Photo Flash of 1957."

Seaforth Minute Shave is being marketed nationally in a six-ounce can by Seaforth of New York. Filled by Products Manufacturing Corp., Little Falls, N. J. and using a Clayton valve, the product is packaged in a new lithographed American Can Co. container.

Consultant's Corner

by Robert A. Foresman, Jr.

A Way to Provide New Career Incentives in Science

With the Editor's permission, my column this month will roam a bit far afield from aerosols.

THERE is much talk of the need for increased emphasis on our earth satellite and ballistic missile program. This is a natural result of the Soviet success and it may be possible for tremendous acceleration to take place. Unfortunately, we are probably in for additional unpleasant surprises, since a scientific break-through is seldom an isolated event. The Russian satellite did not happen suddenly — we have known for years that the quality of technical personnel, developed in the Soviet Union has been high and the numbers per year *greater by many times than in our own country, or for that matter, in the whole Western World.*

Facilities for training scientists may be in somewhat short supply and the atmosphere of suspicion, distrust, and general lack of appreciation on the part of our government for its scientists are undoubtedly contributing factors, but the most serious reason for the shortage of young Americans embarking on scientific careers lies simply in the fact that a scientific education and career offers little appeal to most students who, at the time of decision, can seen no advantage to be gained from the effort necessary.

Aside from the satellite or its ballistic brothers, in the complex technical world of today, one thing is clear —political superiority, or even survival, cannot be maintained without the availability of gigantic technical capacity. Once that fact is accepted, the requirements for our national and cultural future become transparently obvious. It is our national responsibility to assure overwhelming quantities of superbly qualified technical personnel among our population. This can no more be left to guesswork than can the logistics of a military invasion. The "how" of the proposition remains the only decision.

Over a period of several years, in discussion with various informal groups, I have suggested a method of stimulating interest in the sciences as a career, but have been discouraged from pursuing the matter by general resistance to the notion and a lack of means to disseminate the idea. Perhaps a new look will not be amiss in view of the clamor caused by "sputnik."

In the hope that we aren't locking the stable after the horse is stolen, a disciplined career of creative scientific accomplishment must be made attractive for all our young people who have the ability to carry it through. What I propose is this: Starting with the class of 1959 or 1960 (this is only a detail) all graduates from accredited colleges in selected fields of technology should be granted an automatic exemption from payment of personal income taxes for life, so long as they remain in the field of science in any capacity, including and especially, teaching and basic research. Variations in scope of exemption are possible and perhaps desirable, but probably not necessary, in order to achieve the best result. Perhaps B.S. degrees should result in a 50% exemption, M.S. in a 75% exemption, and Ph.D. in 100% exemption. Regardless of these details, a 100% exemption should be in the picture. It may be said that college freshmen are not aware of the dollars and cents value of an income tax exemption. A talk with our young people who have watched the $64,000 question on television will quickly dispel that notion.

The results of such a policy would be far reaching in the extreme. First, there would be the immediate stimulation of interest on the part of students. This is the desired end result, but it would not stop there.

Educational institutions and industry would suddenly find that their science salary dollars would go further as it would be possible to pay their scientists much more money and still not necessarily increase the salary budget. Indeed, it would be perfectly practical for the employer and the employee to split the difference in the taxes and both be benefited. For instance, a chemist whose yearly salary is $8,000 00 may take home only $6,694.00, but the salary cost to his employer is still $8,000.00. Under the proposed plan, the employee could be paid $7,347.00 — an increase of $653.00 per year, at a cost of $7,347.00 to his employer who would thus also benefit by $653.00.

That this is unfair and creates a privileged group, will be cried by critics. To this charge I might agree in part. However, all college entrants would have the same chance to undertake a scientific career under the program except for those eliminated for falling short of the necessary high standards. As far as non-college people are concerned, it could probably be said that they are unfairly treated by being denied a college education, however, this program would not be responsible since the situation already exists. That scientific personnel trained and in service prior to such a law would not have the tax advantage might be regrettable and perhaps unfair, but this program is not advocated as a means to increase scientists'

Another "first" for Fairfield...

MIGHTY MIDGET AEROSOLS

Clothing, luggage and sports equipment, courtesy Abercrombie & Fitch Co.

Now you can offer your customers a 2-oz. bomb that will do the work of a regular 12-oz. aerosol. It will cover the same area, too—because each particle of spray is 6 times more potent . . . in knockdown . . . and in kill.

The valve is metered to release 100 mg. of spray each time it is activated. This insures proper application, neither too much spray nor too little.

Although "mighty midgets" represent higher concentrations, they cost less than conventional aerosols of equal killing power. They exhibit no greater staining characteristics either. The reason is obvious: the single active ingredient is Improved Pyrenone*. And, of course, when used as directed Pyrenone is *nontoxic*.

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FAIRFIELD CHEMICALS

pay—only to increase the number of scientists in our future.

"Subsidy" will be another criticism—again I say, yes it would be subsidy. This apparently cannot be avoided whatever the approach. However, it would be of a type and predicated on a basis that would overcome most difficulties encountered with a subsidy. Philosophically, I am no advocate of "public troughism"—just the opposite, and usually to an unregenerate degree. Independent individualism happens to be my preference, but that has nothing to do with increasing the number of scientists in our midst. The rush of events and influences in modern history in the making, perforce, makes the scientific brotherhood society's elite, whether we like it or not. Everything must give way to that fact to whatever degree is necessary to insure our very existence.

A frequent quarrel with government spending programs is that they can never be curtailed. If we wanted to—sometime in the future—this one could be, for the simple reason that the scientific bloc would never be large enough politically to demand a continuance.

The preceding paragraph of course emphasizes a danger in the other direction—a congressional about-face with withdrawal of tax exemption from the people who have undertaken a scientific career because of it—this could be taken care of by individual irrevocable contracts contingent only on a person remaining in scientific activity. Any revocation of the law would then simply withdraw the advantage for college entrants from that time on.

Another advantage that could be gained, and this for the students who ordinarily can not afford college would be their increased desirability as risks for bank loans to cover their entire education. A simple GI mortgage type of guarantee plus life insurance could make it a highly desirable situation for bankers in general. The future of this aspect of the program is especially bright since a few banks are already considering such loans, even without the advantages proposed here.

To those concerned with the tax loss to our government, it is only necessary to consider the relatively insignificant numbers of people involved to realize that the tax loss would not be serious. In all probability we would wind up with a net tax gain since the result of the increased number of scientists working in industry and government would probably so increase the gross national income that their own tax exemption would be more than offset by increased taxes from the jobs and goods resulting from their efforts.

There is no particular reason to discuss details of curricula in this article, but I would like to add one thing. The humanities and languages in real quality and scope should be required. The scientific contributions of all nations should be understandable and their significance easily apparent to the mass of our scientists regardless of the language used in any given case and without the use of interpreters or translations. In addition, historical perspective and an

(*Continued on Page* 47)

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AEROSOLS in review

Consumer Magazine Warns of Spray-Can Use

IN AN article entitled "Be Careful with Spray Cans" *Consumer Bulletin*, a leading consumer testing service magazine, (published in Washington, N. J.) describes two accidental deaths resulting from carelessness in the use of aerosol containers. The brief article, which doesn't give either names or dates for the accidents, appears in the July issue of the magazine.

"One death was reported of a man in Ohio whose leg was cut and an artery severed when he was burning trash in the yard of his home and threw a shaving cream spray can in with other discarded items." In the other account, the magazine report continues: "Early this year an unfortunate accident was reported from a city in Florida. A mother, holding a three-weeks-old boy in her lap, was cleaning a bottle warmer with a rust-removing chemical dispensed from a spray can. She pressed the button on the container, but the liquid shot out in the wrong direction and sprayed into the baby's mouth. The child later died."

The article concludes: "It is doubtful if any manufacturer should be permitted to package in spray cans any material so toxic as the liquid involved in this instance."

•

THE Swiss journal of medical information, *Medicine Et Hygene* (printed in Geneva), recently reported on a paper delivered to the International Conference on Chemiotherapy for Tuberculosis by Dr. S. A. Waksman, discoverer of streptomycin and winner of the Nobel Prize for Medicine. Dr. Waksman reported that he and three of his co-workers have developed an aerosol method of treatment of very active cases of tuberculosis.

The method employs neomycin and certain other antibiotics dispensed in aerosol form. It is reported to give excellent results in the majority of new cases and in certain chronic cases that do not respond to other antibiotic treatment.

•

A LEADING English trade magazine, *Soap, Perfumery & Cosmetics*, in its September issue, has taken a strong editorial stand against the packaging of aerosols in uncoated glass. Basing its stand on the much-publicized tests conducted early this year by Jack Pickthall (which the magazine carried in its February issue), the editorial attacks Maria Wiener's article in the July *Aerosol Age* for her "somewhat bland and disconcerting acceptance of the strictly limited responsibility to the public of the uncoated glass aerosol manufacturer, this being the only kind of responsibility that — in her view, presumably — anyone can or ought to expect."

. . . "While on this subject," the magazine continues, "we would like to protest against the common trans-Atlantic habit of 'double talk' in these matters, involving a euphemistic substitution of such words as 'bursting' for the more honestly accurate 'explosion.' What we have seen of the smashing of uncoated glass aerosols can only be described in terms of explosive force, both literally and figuratively."

The editorial concludes: "We shall continue to advise manufacturers not to venture into the marketing of uncoated glass aerosols without first considering, very carefully indeed, the danger factor that can so easily be eliminated by the plastic-coating process."

•

AN UP-TO-DATE story on the status of aluminum containers is one of the feature stories of the September *Food Engineering*, a McGraw-Hill publication. Written by Robert J. Kelsey, the magazine's assistant editor, the article predicts that Victor Metal Products will be the first to actually hit the market with a mass produced aluminum aerosol container; and that Victor will eventually have an output of 120 million aluminum cans per year.

Continental Can and Kaiser Aluminum & Chemical Co. are also expected to have early production facilities ready for the production of aluminum cans, though Victor is the only company to predict a possible price for an aluminum aerosol container. According to Victor Muscat, company president, Victor Metal Products will market its six-ounce aerosol container for $50 per 1000.

Looking for reasons for the rush to aluminum, *Food Engineering* suggests these as strong possibilities:

"1. For the first time, aluminum production has outstripped its market. And producers are energetically looking for new ways to sop up the excess output.

"2. The can companies are irritated at the rising cost of tin plate. And despite the recent boost in pig aluminum prices, many experts believe that the price-tags on fabricated aluminum will tumble under the incentive of high production. This would give the can companies a substitute metal with

(*Continued on Page* 53)

"Touch-action" nebulization permits complete coordination of activation of the nebulizer and inspiration by the patient. Light thumb pressure releases Halothane® through unique, replaceable capillary which nebulizes medication in desired 1.9 micron median diameter particle size.

Refill pressurized cartridge delivers 200 to 250 "chill-free" doses of medication specified by physician.

New Pharmaceutical Development Eliminates Chilling Effect of Conventional Aerosol Propellants

THE problem of "cold feel" commonly associated with underarm deodorants, suntan lotions, perfumes, and various topical skin sprays in pressurized containers, has apparently been completely eliminated by a new aerosol development by Homemaker's Products Corp., Englewood Cliffs, N. J. The new development, called a "Nebu-Halent" touch-action nebulizer, which has been designed particularly for bronchial asthmatics, is expected to open up vast new fields for aerosol dispensing techniques; since for the first time the deterent of chill present in nearly all pressurized pharmaceutical packages has been completely eliminated.

According to Thomas J. Mahon, company president, Homemaker's has also succeeded in overcoming loss of pressure due to refrigeration in continuous release of fluorinated hydrocarbons, so that disposable aerosol packages may now be efficiently applied as compact, portable replacements for oxygen and compressed air tanks and compressor motors to energize long-term nebulizers. He reported that the development will also open up new practical applications for aerosols, particularly in such fields as room-temperature vaporizing for treatment of nasal congestion, in continuous paint spraying, and for dispensing of insecticides. A 16-ounce container, he said, can now be actuated for as long as 119 minutes (or, until the container is emptied *completely*), without appreciable drop in pressure. And, with attachment of an intermittent automatic valve actuator, developed by Albert L. Edelstein (of the Association for Physiologic Research, Inc., New York) application of a 16-ounce aerosol can be prolonged over a period of months, for use in such applications as the dispensing of insecticides inside a sealed barn—all without a cartridge replacement.

Elimination of the chill effect was achieved by dual chambering for packaging of the ingredient apart from the propellant, and in bleeding off the gas rather than the liquid (as has been practiced heretofore). Bleeding of the gas conserves liquid propellant content. Introduction of a capsule heat-exchange stabilizer has accomplished further inhibition of refrigeration in the course of actuation. Both intermittent and continuous propellancy in portable aerosol containers was worked out in cooperation with Mr. Edelstein and Eric Gronemyer, president of Sameric Plastics, Inc., Totowa, N. J. Design of the "Nebu-Halent" nebulizer was assisted in by Messrs. Max and Samuel Soroka, Inhalational Equipment Co., New York and the lateral valve of Aerosol Research, Chicago was adopted for the final design. The propelant cartridges are aluminum fabricated by Peerless Tube, Bloomfield, N. J., and experimental loading was

(*Continued on Page* 43)

NEWS of Pressure Packaging

Graham Joins Clayton

Clayton Corp., St. Louis, supplier of valves for the aerosol industry, has announced the appointment of W. Earl Graham as its Eastern manager,

W. Earl Graham

with headquarters in New York City. Mr. Graham was formerly manager of research, Can Division, Crown Cork & Seal Co., Inc., Philadelphia.

Mr. Graham has had 25 years experience in food preservation and packaging, and has been active in the aerosol industry since its inception over ten years ago. He received a B.S. degree in food chemistry from Pennsylvania State University in 1930, followed graduate study at the University of Pennsylvania. From 1932 to 1937, he was with Francis H. Leggett & Co., canners and preservers of a wide variety of food products.

In 1937, Mr. Graham became midwest research representative of the Crown Can, and in 1940 returned to Philadelphia for Crown and in 1941 was placed in charge of the research department. Responsible not only for customer service and product development, as well as container research, he has knowledge of the preservation and packaging of most of the food and non-food products packaged in metal containers in the U. S. A charter member of the Institute of Food Technologists, he has also served as chairman of the Research Committee of the Can Manufacturers Institute.

Since its beginning in 1946, Mr. Graham has played a large part in the development of the metal aerosol container. He has also been active in the formulation of government regulations on aerosols, and has been prominent in the affairs of the Aerosol Division of the CSMA, having been chairman of the Scientific Committee and is chairman-elect of the Aerosol Administrative Committee for 1958.

With Clayton, Mr. Graham will represent the company's full line of food and non-food aerosol valves.

•

Krylon Appoints Smith

John D. Smith has been appointed sales manager for its Midwest district by Krylon, Inc., Norristown, Pa., major world manufacturer of spray protective coatings and spray enamels. Prior to joining Krylon he was associated with George F. Pettinos, Inc., and Lehigh Navigation Coal Co.

TGA Lists Dec. Program

The 26th meeting of the Scientific Section of The Toilet Goods Association will be held on Monday, December 9th, in the Sert Room of New York's Waldorf-Astoria Hotel. The meeting is, as customary, closed to non-member companies.

Polyoxyethylene Gums in Toilet Goods, by Lloyd Osipow and Lester D. Berger, Jr., Foster D. Snell Inc. and Union Carbide Chemicals Co., respectively.

Cutaneous Antiseptic Activity of 3, 4, 4-Trichlorocarbonilide, by Daniel P. Roman and E. Harvey Barnett, Monsanto Chemical.

The Effect of Fluorides on the Solubility of Powdered Tooth Enamel, by S. D. Gershon, O. W. Neiditch and R. H. C. Lee, Research and Dev. Div., Lever Bros.

Use of the Patch Test in Eliminating Dermal Hazard, by Harry L. Rubenkoenig and Robert A. Quisno, Hilltop Res. Inst.

Silicone Defoamers — Physiological Aspects and Defoaming Efficiency, by R. C. Gergle, W. T. Gregory and C. W. Todd, Dow Corning Corp.

Further Laboratory Studies of Potential Anti-Seborrhoeic Agents, by Irwin I. Lubowe, M. D., assistant clinical professor, Department of Dermatology, New York Medical College.

The Effect of Creams and Lotions on the Moisture Retention on the Skin, by Donald H. Powers and Charles Fox, Warner Lambert Pharmaceutical Co.

International Aerosol Assn. Formed in Europe

THE International Aerosol Association was organized in Basel, Switzerland, on Sept. 12th, it was learned by *Aerosol Age* last month. The association, formed to aid in the "development and promotion of the aerosol industry in general", is expected to attract firms and individuals throughout Europe and the territories outside Europe.

The IAA has established its own offices at Waisenhausstrasse 2, Zurich, and has engaged an association manager, A. W. Naegeli. The new organization is currently engaged in forming IAA "sections" in various countries and the first international meeting has been tentatively scheduled for March, 1958.

At the first meeting of the association in Zurich on Sept. 25, Gerald M. Mayer, of Precision Valve Int. S.A. (foreign representative for Precision Valve Corp., Yonkers, N. Y.) was elected president. Dr. Egon Honisch, director of Aeratom A.G., Rapperswil, Switzerland, filling equipment manufacturer, was elected vice-president and secretary; and Emil Hirschburger, director of Aerosol-Service Inc., Riehen, Switzerland, a major European custom filler, was elected treasurer.

Dr. Honisch, in making the announcement of the formation of the new association, declared: "In view of the fact that the aerosol medium has become of great importance not only in Europe, but also in the countries outside Europe, we may expect a very wide and rapid growth for the new association."

Crown Announces Expansion

A facilities expansion program running into six figures is now in its final stages at the Can Division of Crown Cork & Seal Co., it has been announced at the division's Philadelphia headquarters. The plant improvement program will substantially increase the company's production capacity for 12-ounce aerosol containers.

The announcement said that a portion of the effort is being expended toward improving specifications for internal coatings—in order to "further perfect multiple coating systems suitable for the greatest possible range of products." Another phase of the expansion program will increase the company's production line capacity for a variety of pressure can tops.

•

Merck Cuts Gibrel Price

Merck & Co., Rahway, N. J., has announced a price decline in "Gibrel" and "Gibrel" formulations from $10 per gram to $4 per gram. This lower price, which is expected to make the gibberellic acid practical for use on general agricultural crops, is also expected to result in new aerosol activity for the product.

At the same time the company announced that results from its grants-in-aid at agricultural experiment stations are indicating definite new areas of use for gibberellic acid, including seed treatment and foliar sprays for agricultural crops.

•

Amber Oils Names Agent

Slip Products and Engineering Co., Ltd., London, recently took over world distribution of the aerosol line manufactured by Amber Oils, Ltd., London and Wolverhampton. Slip Products will handle "Aerozene" (a penetrating oil and spring lubricant), "Blink" (a metal protector), and "Rusolvent" (an easing fluid).

Amber Oils will continue to handle "Ambersil" (a silicone mold release and anti-stick agent), and "Ruby," (an industrial protective lacquer).

At the same time Amber Oils announced the appointment of two new directors — V. E. Baker to the post of commercial director and E. G. Reynolds as works director.

•

CSMA College Group Meets

The CSMA's Committee on Liaison with Colleges and Universities, meeting in New York recently, has sent out questionnaires to member companies asking about availability of company literature for inclusion in an information "kit," to be sent to interested colleges and universities. The committee, headed by Dr. F. A. Mina, of Lodes Aerosol Consultants, Inc., New York, is a special committee set up by the Aerosol Division to offer guidance to colleges and universities interested in the study of pressurized packaging techniques.

•

VAH Holds Co. Outing

About 500 employees from the three plants of van Ameringen-Haebler attended the annual outing at Mazdabrook Farms, Parsippany, N. J., in September. The outing, which included a golf tournament, softball games, and a treasure hunt, was the largest ever held by the company.

Air Wick Begins Campaign

The Air-Wick Division of Seeman Brothers, New York, last month launched a coordinated advertising campaign to introduce "Air-Wick" spray, newest form of the chlorophyll home deodorizer. The campaign will utilize full-page advertisements in leading consumer magazines, television promotion over Arthur Godfrey's CBS television program, and point-of-purchase promotions. The spray will be marketed in natural and floral fragrances.

•

Schwartz To Be TGA VP

Robert E. Schwartz, of the Wildroot Co., Buffalo, N. Y., has been elected a vice-president of the Toilet Goods Association, New York. He served on the board of directors for several years and was chairman of the 1956 annual convention of the TGA.

At the TGA's board of directors meeting, held Sept. 25, two new directors, Owen Stoner of Prince Matchabelli, Inc., and George L. Schultz, of Shulton, Inc., were elected to fill vacancies which had occurred in the Board.

—Convention Calendar—

National Paint, Varnish & Lacquer Assn., annual convention, *Sheraton Park and Shoreham Hotels, Washington, D. C.* ..... Nov. 4-6

Manufacturing Chemists' Assn., 7th Semi-annual meeting and Winter Conference, *Statler Hotel, N. Y.* ..... Nov. 26

26th Exposition of Chemical Industries, *Coliseum, New York* ..... Dec. 2-6

American Institute of Chemical Engineers, Annual Meeting, *Conrad Hilton Hotel, Chicago* ..... Dec. 8-11

Toilet Goods Assn., Scientific Meeting, *New York, N. Y.* ..... Dec. 9

American Pharmaceutical Mfgrs. Assn., Mid-year and Eastern Section Meeting, *Waldorf-Astoria Hotel, New York, N. Y.* ..... Dec. 9-11

Chemical Specialties Manufacturers Association, *Hollywood Beach Hotel, Hollywood, Fla.* ..... Dec. 9-12, 1957

Packaging Machinery and Materials Exposition, *Atlantic City, N. J.* ... March 25-28, 1958

Toilet Goods Association, *Poland Spring House, Poland, Me.* ..... June 25-29, 1958

K. G. Voorhees Honored

Kenneth G. Voorhees, president of Ungerer & Co., New York, last month was honored by a presentation of a gold watch, in recognition of 25 years of service to the company. A testimonial luncheon, sponsored by his executive associates, followed the presentation.

Mr. Voorhees joined Ungerer & Co. in 1932; became president in 1949 and completed the 25-year period of service on October 2. During his association with Ungerer, the company has built a new manufacturing plant, has modernized its New York office and branch warehouse, and established new branch office facilities in Los Angeles and Toronto.

Some 50 members of the company attended the celebration, including Ivon Budd and George Branigan, both of whom spoke briefly. Mr. Voorhees, in a brief address, envisioned the continued expansion of company activities, outlining plans for the future.

•

Pennsalt Names Sales Agents

Pennsalt Chemicals Corp., Philadelphia, has named the American Potash & Chemical Corp., Los Angeles, to be national distributor for its "Isotron" propellants and refrigerants. The announcement followed a similar one by Pennsalt naming the Pacific Scientific Co. to represent the company in the states of Washington, Oregon, Idaho, Montana, California, Nevada, and Arizona.

The Pennsalt agreement with American Potash becomes effective on Jan. 1, and will cover the complete "Isotron" line, including 11, 12, 22, 113 and 114. American Potash, which boasts of 20 years of service to the refrigeration wholesaler trade, will continue to manufacture and distribute sulfur dioxide and methyl chloride.

The Pacific Scientific Co., which has been in business for three decades, has offices in Los Angeles, San Francisco, Portland and Seattle.

•

Fluid Adds Storage Unit

Fluid Chemical Co., Newark, N. J., last month announced the purchase of a mobile propellant storage and transportation unit. The wheeled trailer unit, which is designed to hold propellant 114 and will be used exclusively by Fluid's perfume and cologne packaging department, is believed to be the first such storage unit ever purchased for exclusive storage of propellant 114.

•

SCC Holds Two Meetings

The September meeting of the New York Chapter of Society of Cosmetic Chemists featured a talk by Mrs. Maria Wiener, technical director of Fluid Chemical Co., Newark, N. J., on the subject of obtaining the desired spray pattern in aerosols. Stressing the importance of design of the valve and actuator, pressure, flashing, as well as physical and chemical characteristics, Mrs. Wiener explained many of the intricate workings of the aerosol.

The October meeting of the group heard a paper by Miss Elizabeth Ramsey, bacteriologist for the Leberco Co., on the subject "Microbiology and its Place in the Cosmetic Industry."

Scherer Leaves Crown Can

John H. Scherer, former general sales manager of the Can Division of the Crown Cork and Seal Co., Philadelphia, was recently appointed vice-president and director of marketing and sales by the Thermoid Co., manufacturer of rubber, textile, and asbestos products. Prior to joining Crown Mr. Scherer was vice-president in charge of sales for the Permacel Tape Corp., a subsidiary of Johnson & Johnson.

•

Ga. Firm Completes New Lab

Aerosol of Georgia, Inc., Atlanta, has just completed a new aerosol laboratory, according to an announcement by C. B. Beaullieu, president. It will be under the supervision of F. B. Beaullieu, vice-president, who is developing new aerosol products for customers in Georgia and surrounding states.

Grocery Outlets Gain in Race for Aerosol Sales

THE race between drug stores, grocery stores and other retail outlets for top sales in two of the leading aerosol products, hair sprays and shaving creams, currently reveals startling gains for both "other retail outlets" and grocery stores, reported *Drug Trade News* in a recent survey. However, the survey showed that drug stores continue to maintain their sales lead over groceries and supermarkets. The figures are considered important by the marketers of these two aerosol product types.

In the hair spray market, of the total 1956 sales figure of $75,050,000, drug stores accounted for exactly half ($37,570,000) and reported an increase of 38.2% over sales during the previous year. Grocery outlets accounted for sales figures of $21,260,000 in hair spray sales, an increase of 66.8% over the 1955 figures. "Other retail outlets" (discount stores, mail order houses, beauty salons, etc.), however, had the biggest increase in sales—a whopping 69.8%, though they actually sold only $16,220,000.

The 1956 shaving cream totals revealed similar change patterns, with "other retail outlets" reporting the highest percentage increase—13.9%. Drug stores accounted for 44% of the $30,800,000 total sales, or $13,440,000. Grocery outlets reported 29% of the total, or $9,010,000; and the "other outlet" category reported 27% of the total or $8,350,000. As was expected, all three outlets reported big reductions in volume for brushless and lather shaving creams. In both these categories, drug stores suffered the severest percentage setbacks, with sales last year off 10.6% for brushless shaving creams and 11.4% for lather shaving creams.

Ironically enough, the percentage increase reported by drug stores in the lather shaving and brushless shaving cream categories, were only partially offset by gains of 11.4% in the aerosol shaving line.

•

Bahamas Aerosol Corp.

The British Aerosol Corp., Ltd. has been registered in the Bahamas, B.W.I., to carry on the business of preparers of aerosol packages. The new company, with an initial capital of $280,000, will carry on business in London at Quadrex House, Park Lane, W.1.

Window Cleaners
in aerosols...*
PRECISION
*Top off your product with a Precision Valve for perfect assurance of a non-returnable item on the market shelf.
Today's window cleaner manufacturers are aware of the brand-new and fast-selling market for their products; this has come about by the consumer's acceptance of aerosol dispensers. This year has shown that the pioneers of aerosols for almost any home-cleaning product whether it is a detergent, wax, insecticide or window cleaner, were correct in their foresight; and sales are far ahead of competitors. Today's market demands convenience, economy and perfect operation of aerosol products.
The aerosol dispenser with a Precision Valve gives you a guaranteed operation.
When you are testing, sampling, checking your product for the aerosol market, be sure to test, sample, check, Precision Valve for the tops in your new product.
P.S. Aerosol units are expected to reach close to 400,000,000 this year.

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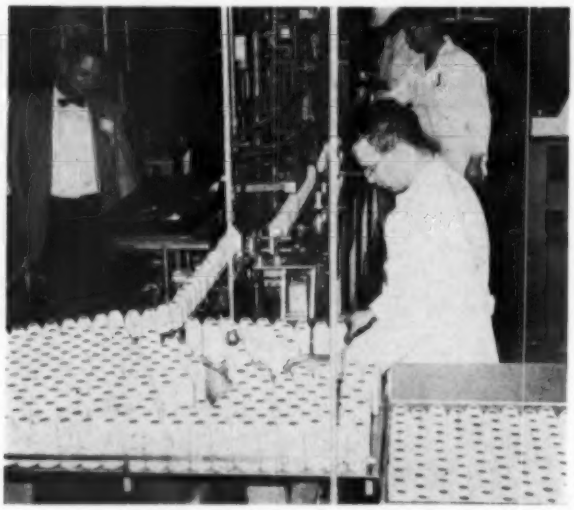
Titan Holds "Open House" at New Colorado Plant

THE FIRST public inspection of the facilities of the Aerosol Division of Titan Chemical Industries, Colorado Springs, Colo., held Sept. 28 and 29, attracted guests and stockholders from all over the Rocky Mountain region. The "Open House" marked the formal opening of Titan's entry into the aerosol industry.

Since June when the company moved into the Colorado Springs facilities, Titan has been installing aerosol filling lines, building an inventory of raw materials, establishing a research laboratory, and setting up a sales group. These developments were shown at the Open House by colorful displays, or pointed out to the guests on guided tours through the plant.

Stock in the Colorado corporation is held by over 6,000 Colorado residents.



Titan's aerosol production line is inspected by the Aerosol Division manager, Martin M. Reynolds (far left) prior to Open House activities.

Titan executives on hand to greet guests included: Dr. Joseph D. Park, executive vice-president; Everett Cole, president (and a noted Colorado mining and banking executive) and Dr. Paul L. Barrick, secretary-treasurer.

Titan officials inspect production line of shave lather prior to run during Open House activities. Left to right: R. J. Seffl, chief chemist; H. B. Goldsby, sales manager; M. M. Reynolds, division manager; and R. L. English, traffic consultant.

A Correction

In our "Aerosols in Review" for October, in a summation of the consumer article that appeared in the *Wall Street Journal*, we unfortunately picked up the fact that "in a 79c aerosol item, the price of cans is 35c to 45c." Actually, the *Journal* article omitted a decimal point in each of these figures, which should read "3.5c to 4.5."
—The Editor

Lipscomb to ANPA Post

Charles T. Lipscomb, Jr., president and a director of the J. B. Williams Co., Glastonbury, Conn., last month took over as president of the Bureau of Advertising of the American Newspaper Publishers Association. The bureau is the oldest and largest association in the field of advertising media, having been established in 1913 to tell the advantages of using newspapers for advertising. It has a membership of 1000 daily newspapers in the U.S. and Canada, about 80% of total circulation.

Prior to his affiliation with the Williams Co., Mr. Lipscomb was president of the Pepsodent Division of Lever Brothers. He was chosen to the ANPA post from among more than 40 candidates.

•

Announce New Acrylic Spray

Eska Chemical Corp., Brooklyn, N. Y., has announced the development of a new acrylic paint spray that gives evidence of improved adhesion to metal, glass, and other surfaces that have hitherto proven unsuitable for acrylic paint spraying. The new formulation, developed in Eska's research laboratory, will reportedly eliminate the use of primers on raw metals and other hard-to-stick surfaces, as well as paint "runs."

The development is expected to open up several new product possibilities for aerosol acrylic sprays. In addition to the possibility of a whole new family of spray paints that may be applied to raw metals, the spray's ability to stick to glass is expected to find new use by window decorators, artists, and florists. These paints are available to Eska's customers for packaging under their own label.

DuPont Sets Price Policy

In a move to help its customers reduce distribution costs to the lowest possible level, the "Freon" Products Division of DuPont will institute a one-price policy on all its "Freon" propellants and refrigerants. Effective Dec. 26, the change means that any particular type of "Freon" propellant compound will be sold at one uniform price schedule, regardless of the chemical's end use.

•

Announce Nitrogen Filler

JG Machine Co., New York, last month introduced the first nitrogen filling equipment to the aerosol industry. The new gassing machine, on which the company is offering November delivery, will make up to 20 injections per minute in either a semi-automatic or automatic operation.

•

New South African Firm

Delta Associates (Pty.) Ltd., a new aerosol packaging firm in Johannesburg, South Africa, was founded recently. Managing director of the new firm is L. B. Goodman.

New Pharmaceutical

(*Continued from Page* 33)

handled by Aerosol Techniques, Bridgeport. Particle size determinations and distribution output of the nebulizers were established by Battelle Memorial Institute, Columbus, Ohio.

HOMEMAKERS' trade-mark of the propellant used is "Halothane," though its chemical composition is dichloro-difluoromethane. Special studies confirming the safety of "Halothane" were conducted under direction of Norman Molomut, Ph.D., research director of Waldemar Medical Research Foundation, Port Washington, N. Y.

The team of clinical investigators was headed by Dr. Gustav J. Beck, Presbyterian Medical Center, Columbia University, College of Physicians and Surgeons, New York, whose findings are to be published in the near future in several medical journals. Corroboratory clinical studies were conducted by Dr. Sol Katz, chief of the Division of Pulmonary Diseases of the District of Columbia General Hospital, Georgetown University, School of Medicine, Washington, D. C.

With Dr. Beck's reports submitted to the American Medical Association and to the American College of Chest Physicians, Chicago, initial presentation of the "Nebu-Halent" nebulizer to the medical profession is to be made in November issues of their periodicals and at assemblies of both organizations in Philadelphia on Dec. 2.

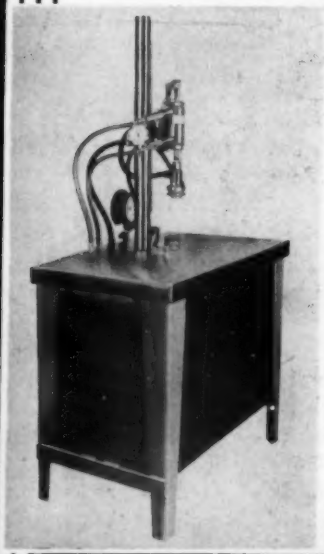
The company is planning to market a whole line of bronchodilating drugs and antibiotic and mucolytic preparations in separate chambers to be used in the "Nebu-Halent," although the prescribing physician is advised in the company's forthcoming advertisements to use the particular bronchodilator of his choice. There is no chemical incompatibility between "Halothane" and any of the drugs prescribed, reported Dr. Anthony J. Maffia, medical director, and Charles H. Soren, vice-president and chief chemist.

Homemakers' has patents pending on each of their innovations and is offering licensing arrangements in proprietary and ethical applications, as well as agricultural and vetrinary uses. The company itself will be introducing "chill-free" pressurized drugs for skin care. The firm's patent attorney is Mock & Blum, New York.

In the food field, Mr. Mahon informed *Aerosol Age* that, by means of a free floating piston inserted in an aerosol container, Homemakers' researchers have succeeded in dispensing viscous condiments without the slightest contamination by the propellant. Heavy ointments, such as "Unguentine"(®), "Mentholatum"(®), and "Diaparene"® "Peri-Anal Creme," may now be propelled in aerosol packages, he said.

The firm is known for its full line of non-volatile antiseptic preparations under the "Diaparene" brand and was founded ten years ago.★

New Nitrogen Gassing Machine for Low-Cost Filling



MODEL **14B**—Handles all size containers.
- Up to 20 injections per minute
- For semi-automatic or automatic operation

JG purging unit can be used with nitrogen

MODEL **14A**—A propellant injector with up to 500 cc. capacity.
Accurate within ±.75% on injections down to 5 grams.

MODEL **14** — For filling standard size closures
Up to 300 CU. CM. capacity (other spec. same as model 14A)

Propellant Pumps, Accumulators, Stainless Steel Hot Water Baths, Propellant Sight Gauges, Single and Double Product Fill, Crimper, Pressure Burette, and Can Cleaner

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Equipment—Processes—Bulletins—

Plexiglas Used for Filling Machine Design

Lewis H. Kinsley, vice - president of Hope Machine Co., Philadelphia, checks a stainless steel package filling machine valve, designed after tests made with prototype valves of Plexiglas, like the one on the left. All of Hope's new valve designs are first built of Plexiglas, the Rohm & Haas acrylic plastic, as a time and cost saving measure. The transparent plastic permits easy location of possible design flaws, and observation of the operation of the valve in handling filling materials, before the more expensive metal production models are cast and molded.

A PROBLEM of air entrapment in valves, faced by the Hope Machine Co., Philadelphia, maker of aerosol ingredient filling machines, was solved by utilizing "Plexiglas," the Rohm & Haas acrylic plastic, to make transparent duplicates of the valves for study.

The original valves were two-way, rotary stainless steel units which admitted the food, drugs, cosmetics, or other materials to be packaged, into a measuring type piston filler. On the second part of the cycle, the material passed from the piston back through the repositioned valve to the delivery spout. These metal valves, of a new design, had entrapped air rendering the filling operation inaccurate on a volume basis, and causing a shortage of product discharge in the containers, impairing the saleability of the products.

Efforts to correct this defect with changes in the metal valves proved very time consuming, and did not actually lead to direct solution of the problem. Full size "Plexiglas" valves and piston fillers were then made, and put into operation for study. The transparent plastic immediately revealed the point of entry of the air bubbles, and the stage of the cycle at which they appeared. Hope Machine's engineers then redesigned the valves so air entrapment was eliminated. It was then a simple matter to build metal valves in duplication of the functioning "Plexiglas" original, and the problem was solved. Now, whenever a new size or kind of filling valve is to be made, a "Plexiglas" model is first made from the blueprints. This valve is studied before metal production units are fabricated, thus saving rejection of expensive molds and avoiding the waste of labor and materials.

Hope Machine has built a number of "Plexiglas" replicas of their metal valves, and has also found them useful in sales promotion. Prospective customers can see directly into the valves, to observe how their own products are handled by the filling machines.

•

Aerosol Engine Starter

The Oil Engine Division of Rolls-Royce, Ltd., English motor car company, recently completed cold-chamber tests with "Aerostart," an aerosol-packaged gasoline engine starting aid. As a result of these tests company approval has been given for the use of the product with the Rolls-Royce "C" engines at temperatures below —15° (when some form of starting aid is necessary).

In tests carried out on a 12-litre engine, it is reported by the British magazine *Oil Engine*, satisfactory starts were obtained at —30°C. This was without the use of any source of external warmth.

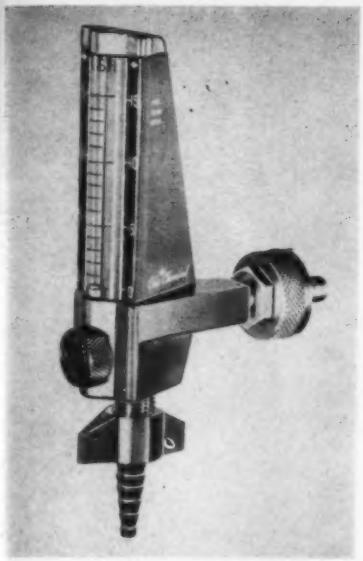
In any but test conditions, Rolls-Royce recommends the use of coolant heating, and additional means of imparting general warmth to the engine and its auxiliaries. "Aerostart" is made by Barnard Drake and Partners, Chichester, England, and marketed by Patentools, Ltd., Brighton. It retails for the equivalent of $2.30 in the United Kingdom, and is said to provide about 100 starts for a two-litre engine and about 10 starts for a 12-litre engine at —25°C.

•

New Laboratory Mixer

A new laboratory mixer, designed for use as a laboratory or production machine, has been introduced by the Rapids Machinery Co., of Marion, Iowa. It is available in mild steel or stainless steel, and features the same cross-blending mixing action found in larger standard and industrial units. It has a capacity of two cubic feet or approximately 50 pounds.

Pressure Flowmeter



A new, pressure-compensated flowmeter, for use in all types of inhalation therapy including aerosol administration, has been designed by the Ohio Chemical and Surgical Equipment Co., a division of the Air Reduction Co., Madison, Wisc.

The new flowmeter can be quickly and easily adapted for use with single stage regulators on cylinders, or on pipeline installations. Indication of actual flow is almost unaffected by downstream restrictions such as those caused by diluters, humidifiers, or nebulizers.

The meter is made of high strength forged brass, and its scale is calibrated to 15 LPM oxygen.

•

Chromatography Brochure

A brochure describing the "Model 154-C" single-stage vapor fractometer and the "Model 188" triple-stage vapor fractometer, new gas chromatography instruments, has just been published by the Perkin-Elmer Corp., Norwalk, Conn.

The "Model 154-C" offers all the specialized features of the "P-E 154" series, plus an expanded line of standard columns, precision electronic temperature regulation, reverse flushing feature and automatic recorder range control. New accessories are available for very high and low temperature runs, sample combustion in operations and an electro-mechanical integrator for automatic quantitative measurement.

The "Model 188" triple-stage vapor fractometer makes possible the single run analysis of a sample containing a large number of components which boil over a wide range. The instrument is designed to make three rough cuts of a total sample without need for pre-separation and produce three simultaneous analyses under optimum chromatographic conditions.

•

New Use for Plastic Spray

The problem of plaster casting disintegration (especially with children) because of writings, carvings, and washings to which the cast is subjected during the course of routine fracture care, has been solved by spraying the cast with a durable, protective acrylic coating in an aerosol container, reports Krylon, Inc., Norristown, Pa. External spraying with its "Crystal-Clear Spray Coating" can markedly reduce this problem, the company reports, by coating the cast with a tough, durable, transparent, protective jacket.

•

Propellant Tank Racks

Builders Sheet Metal Works, Inc., New York, last month introduced a new line of tank racks for holding 145-pound or 25-pound cylinders of fluorinated hydrocarbons, carbon dioxide, and other compressed gases. The racks, which will hold the gas cylinders either upright or inverted, can be either free standing or fastened to the wall or floor. The frame size is 48 inches wide, 20 inches deep, and 54 inches high.

SALESMAKER!
METAZENE®
(specially refined esters of methacrylic acid, U.S. Patent 2,544,093)
THE SPACE DEODORANT THAT KILLS ODORS CHEMICALLY!

Salesmaker is right! There's a large segment of the buying public that objects to strongly perfumed deodorizers. Turn these objections into sales for you by using Metazene in your aerosol formulations.

Metazene acts differently from other space deodorants in that it actually *destroys odors chemically*. Not a masking agent, not a desensitizer, Metazene stands alone in its complete odor killing properties.

Available to the aerosol merchandiser as an 80% concentrate. Write for technical data and prices.

MOTOMCO, INC.
TERMINAL AVENUE • CLARK, N. J.

Producers of famous **PIVAL®** *and* **PIVALYN®** *Rodenticides*

When your customer sees—and smells—how quickly and effectively MEELIUM works, how spring-fresh it makes the air, it can mean more sales for you.

MEELIUM works effectively because it neutralizes and destroys both organic and inorganic odors completely—it doesn't merely cover them up. And it can do the job in an average-sized room in from 3 to 5 seconds—your customer will like this kind of economy, too.

MEELIUM in suggested concentrations is chemically stable, non-corrosive, and about equal in toxicity to pyrethrins. It is supplied to the aerosol industry as a 60% active deodorant.

MEELIUM is practically odorless. If a fragrance is desired we suggest a maximum of .1% of a suitable perfume.

WRITE TODAY FOR COMPLETE DETAILS ON ECONOMICAL MEELIUM FORMULATIONS AND CONTRACT PRICE SAVINGS.

TRY THESE PRENTOX PYRONYL AND PYRETHRUM PEST-TESTED PRODUCTS

Pyrethrum Extract #20 • Pyrethrum Extract #100 • Pyrethrum Extract 20% • Pyronyl #20 Pyronyl #100 • Universal Concentrate • Pyronyl #101 • 50-5 Oil and Emulsifiable Concentrate 40-5 Concentrate • 20-II Concentrate • 66-6 Oil and Emulsifiable Concentrate • Pyronyl 75—The Oil-Free Concentrate • Roach Spray Concentrate • Pyrethrum Powder • Dust Concentrates

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Crown Unveils New Can

A new pressure package design has been developed by Crown Cork & Seal Company's Can Division, Philadel-

phia. It is a 12-ounce fabricated "Spra-tainer" which features printing on the standard deep-drawn dome top . . . an exclusive CROWN development.

The entire container, originally developed for Reddi-Wip, Inc., is now available for all product types. The new printed-dome top is said to offer excellent new package decoration and merchandising possibilities. By this new technique, Crown points out, it is possible to have a container with complete, overall color lithography for maximum consumer eye-appeal.

The new colored and printed dome creates an excellent visual impression from dealer shelves. Use of "log-roll" type printing on a portion of the label can provide excellent product identification when the package is laid down in dairy cases or dispenser racks.

•

DuPont Appoints Lawrence

The "Freon" Products Division of DuPont, Wilmington, has announced the appointment of A. Hicks Lawrence Jr., as manager of aerosol propellant sales. He replaces T. D. Johnson, Jr., who was recently designated assistant director of sales for the division.

Succeeding Mr. Lawrence as manager of specialty products sales will be James C. Feldmann, who had been superintendent of the plant technical section of DuPont's Antioch, Calif. "Freon" propellant plant.

In the same announcement the division made known the appointment of William A. Bours III, as director of sales for the division. He succeeds Robert J. Thompson, who retires at the end of the year. Mr. Bours had been assistant director of sales.

Midget Aerosol

(*Continued from Page* 17)

policy, Fairfield will not market "Pyrenone Midgets" but is offering it as a contribution to the aerosol industry. However, the product labels will be identifiable either by the name "Pyrenone" (which certain manufacturers will obtain permission to use) or by the listing of piperonyl butoxide and pyrethrins in the active ingredient statements.★

Consultants Corner

(*Continued from Page* 28)

awareness of cultural pressures throughout history are as important as technical knowledge if the heritage of America is to be maintained and our adulthood as a leader among nations stand unquestioned before the world.★

Editor's Letters

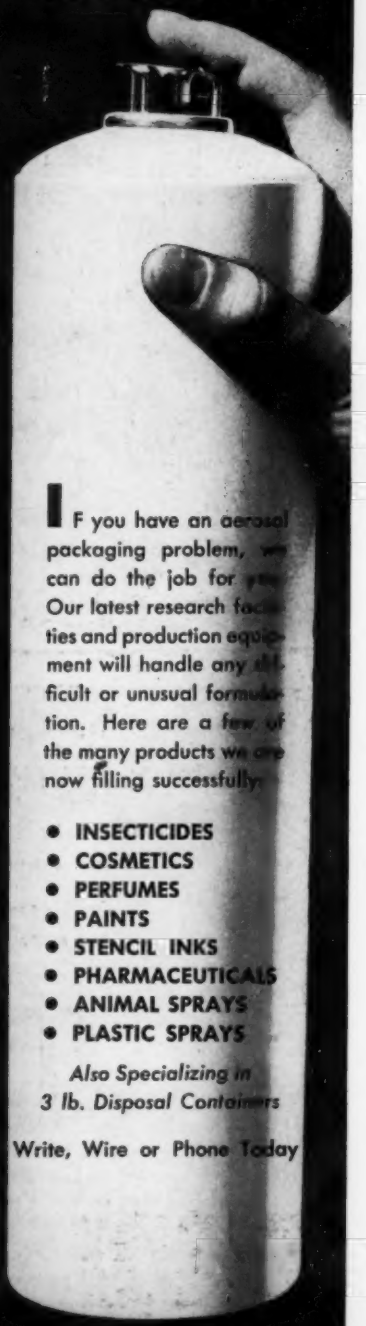
(*Continued from Page* 8)

tions imposed upon them—is a never-ending source of wonderment. The existence of a market of several tens of millions of aerosol products in Europe alone is testimony to this. In fact, it is often the high-pressured American with a "ram-it-down-the-customer's throat" attitude which has caused more trouble than anything else. In one major country in Europe a pressure packaging has been set back perhaps 18 months by disastrous undertakings either sponsored by or participated in by Americans. Such individuals are, fortunately, in a very small minority. Their influence, however, if given free rein, can undo what the vast majority of saner businessmen on both sides of the Atlantic have painstakingly sought to accomplish.

When presumably intelligent people write that "statistics on production and sales reveal only the enormity of masses stupidity . . ." in Europe, one wonders just how much diplomacy will be required to

Specialists in Small Run

AEROSOL PACKAGING



IF you have an aerosol packaging problem, we can do the job for you. Our latest research facilities and production equipment will handle any difficult or unusual formulation. Here are a few of the many products we are now filling successfully:

- INSECTICIDES
- COSMETICS
- PERFUMES
- PAINTS
- STENCIL INKS
- PHARMACEUTICALS
- ANIMAL SPRAYS
- PLASTIC SPRAYS

Also Specializing in 3 lb. Disposal Containers

Write, Wire or Phone Today

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SPRAY CAN FILLING CORP
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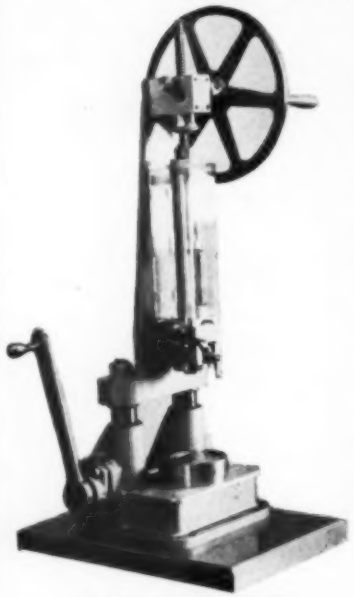
DEVELOPED FOR THE CONSULTING LABORATORY, THIS APPARATUS IS THE ULTIMATE IN FUNCTIONAL DESIGN AND PERFORMANCE

Our apparatus division has been set up to make all items available to the industry. Prices and descriptive literature on request.



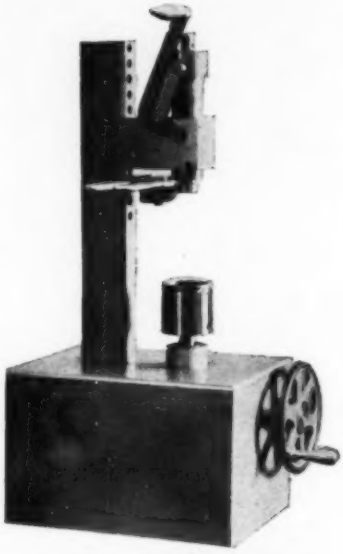
Foresman Liquefied Gas Manipulator

APPARATUS AVAILABLE

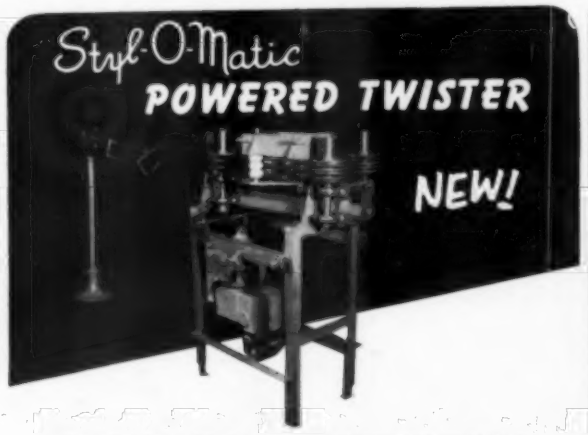
Cont. Filling Corp. Clinch Torque Meter

Liquefied Gas Manipulator w/Universal Head
Propellant Manifold for Manipulator
Hand Operated Vial Capper
Change Parts for Vial Capper
One inch opening Can Closing Press
Hydrostatic Test Units
Karl Fischer Pressure Titration Cells
Dead Stop Indicator for Karl Fischer Titrameter
Density Units
High Pressure Test Bombs
Can Sampling Units — Piercing or Valve Actuating
Pressure Gauging Unit — Pressure Balance or Water Filled
Test Ovens — Standard or Custom Built
Instantaneous Chiller Units — Mechanically Refrigerated
Electric Hot Water Test Bath Standard or Custom Built
Hot Water Bath Transfer Baskets Safety Top
Tank Racks
Table Tank Rack Combinations
Safety Screen Tubes for Glass Pressure Tubes
Plastic Protective Screens
Gloves and Masks

Apparatus Division
ROBERT A. FORESMAN, JR.
1690 Margaret Street
Philadelphia 24, Pa.



Foresman Hand Operated Vial Capper



TURNS 60 to 180 bottles per minute 270° or 360° to empty foreign matter. Hold containers upside down for approximately 18" for air cleaning if so desired. Overall length of unit 8' 8" – 32" for the powered section and 6' for the twister. Easily changed twister permits use for various size containers.

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27-01 Bridge Plaza North
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Please send Bulletin SPT-1 giving details on the Style-O-Matic Powered Twister.

COMPANY.....
BY.....
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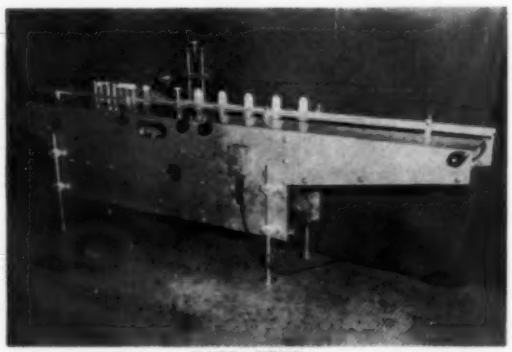
CODE DATING MACHINE FOR AEROSOL CANS

Will mark the top or bottom or both at the same time



PATS. PEND.

Kiwi® Coders Corporation announces a new power-driven machine for economically and automatically code dating the concave bottoms of pressurized cans or flat bottoms of other round containers. Can also be used as a work table for affixing parts to cans.

Send details on your specific marking problems.
Literature available on all types of applications

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minimize and eventually to excuse such *individual* stupidity. After all, it was this same "mass stupidity" which, in Dr. Clark's own words, produced a "Lister, Pasteur, Hahnemann, Freud, and Jung."

We can only hope most sincerely that the American readers of *Aerosol Age* will not picture Europeans as they have been represented by Dr. Clark, and that European readers will not consider Dr. Clark or his views as being representative of the majority of Americans. Only when one has a degree of mutual respect for the other fellow and his problems and attitudes can progress be made towards one's respective, and more often than not, mutual aims.

Andrew H. Wolff
Pegasus International Corp.
New York, N. Y.

* * *

To The Editor:

You would oblige us very much by sending us five reprints of the "Pharmaceutical Symposium on Aerosols," which appeared in your magazine for September, 1957.

Erik Wahlin
SKANDINAVISKA AEROSOL AB
Stockholm, Sweden

We have sent Mr. Wahlin the desired reprints. A limited number are still available at 50 cents each.

The Safety Problem

(*From Page* 11)

observant, unintelligent consumer, who, through his own shortcomings, may be endangering himself and others. What is so important to the industry is that such careless individuals could bring about the enactment of all kinds of additional safety regulations that are totally unneeded.

The case of the man attempting to do away with an aerosol can by burning brings up a serious problem with which the industry may soon have to deal. The used aerosol container must be done away with in some safe manner, and to ask the consumer to vent out the remaining propellant gas is a poor solution. Immediately, the aerosol's chief advantage (that of ease of use) is negated.

In areas where "sanitary fill" is a feasible and practical method of doing away with garbage, (as in northern N. J. & certain other areas) there is no problem. The can is simply buried and eventually rusts away harmlessly. Also, most city incinerators *can* handle aerosol cans with no problem although the authorities don't seem overly eager to do so. The principal problem exists where the consumer must dispose of the can himself — either in a home incinerator or some other type of a disposal unit.

Possibly the industry could do much to foster public relations by devising some satisfactory method of disposing of aerosol cans.★

Package Design

(*From Page* 13)

She uses an atomizer or some similar device."

"However, no atomizer works properly. There is far too much clogging, waste, and evaporation, and there is always the necessity of filling the atomizer from another bottle. The aerosol is the perfect solution to all these problems, in fact, it could be termed a 'natural' for this particular type of product."

"Though formulation might be a problem, it's been a problem for all other aerosol products, and all it needs for solution is a little imagination and effort."

Aerosol colognes, he points out, are already a big product. But if and when perfumes become the *next* big aerosol product, or whatever product does, Donrico will surely capture a big share of the package design.★

A READY SUPPLY OF

Rotenone Resins

IS AS NEAR AS YOUR TELEPHONE

Need quality rotenone resins for garden sprays and aerosols, pet shampoos, household and plant aerosols, cattle sprays and washes? Call C. I. C. for a dependable source. You'll get rotenone resins that are brittle, crystal-clear, free from impurities . . . that readily dissolve in suitable solvents. Available also in oil soluble and emulsifiable concentrates.

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Plant - Metuchen, New Jersey

ARE YOUR FRIENDS IN THE PACKAGING FIELD MISSING A GOOD BET?

Here is an opportunity to let them see a copy of **Aerosol Age**, the magazine of pressure packaging, absolutely free.

We'll be glad to send single copies of the magazine to your friends and acquaintances whom you think will be interested in the pressurized packaging field . . . at no charge to anyone . . . as long as our supply of copies lasts.

Simply fill out and clip the coupon below, and mail it to us. We'll do the rest.

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Caldwell, N. J.

Please send a free copy of **Aerosol Age** with my compliments to the persons listed below.

If possible send a copy of the current issue.

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Who's Who in the Aerosol Industry

Harry Isacoff is technical director of van Ameringen-Haebler's aerosol research and product development laboratories. Under his direction, VAH, one of the pioneers in aerosol research, has expanded and diversified its aerosol research program.

A native of New Hampshire, Mr. Isacoff graduated from Columbia University. He first became associated with the pharmaceutical industry as a research and development chemist with Brewer and Co., Inc. and soon was placed in charge of all the company's manufacturing operations. While with Brewer, he conducted an evening class in product development and manufacturing techniques for sales and office personnel.

Mr. Isacoff later joined the Food and Drug Administration, New York District, and acted in an administrative capacity for the chief drug chemist. He also served as an associate referee of the Association of Official Agricultural Chemists and developed a method for the determination of glycols in cosmetic and drug products — a method that has since been included as a standard procedure in the A.O.A.C. Book of Methods.

Subsequently, he joined Elizabeth Arden's research and development department, where he assisted in setting up a complete aerosol filling line and in the development of new aerosol products. In his current research activities with VAH, Mr. Isacoff directs research on compatibility and stability of fine perfume compounds in all types of formulations and develops new aerosol products for the cosmetic industry, aerosols containing antibiotics and many other forms of medicinals and industrial preparations as well.

A familiar figure at Chemical Specialties Manufacturers' Association conventions, Mr. Isacoff is chairman elect of the Society of Cosmetic Chemists, New York Chapter. He is librarian and historian of the national organization of the Society of Cosmetic

Chemists and is also a member of the American Chemical Society and the Institute of Food Technologists.

Victor Muscat does not look as if he would storm the barricades, nevertheless he *is* a revolutionary. As head of Victor Metal Products Corp., with executive offices in Greenwich, Conn. and plants scattered throughout the country, he heads the largest manufacturer of aluminum tubes in the world. Not content with the present limited uses of aluminum, Mr. Muscat has, over the past few years, directed his engineers in the development and perfection of aluminum aerosols and other new uses for the "white metal."

Victor Metal Products' new aluminum aerosol, produced by impact extrusion, is lighter in weight, is more resistant to rust and wear and is easier to make than its steel-plate counterpart. Mr. Muscat is presently directing the tooling of his nine plants to produce aluminum aerosols and next year he expects to manufacture 120,000,000 such containers.

Victor Muscat, a member of the Young Presidents of America, was born in 1918 and went to schools both in the East and West. He graduated from the University of Arizona and, after service in the Army, took a job with Victor Industries. He quickly rose to vice president and eventually took over the company, changing its name to Victor Metal Products Corp., and expanding what was once a primarily tube making concern to one with a number of different lines.

Under Mr. Muscat's leadership, Victor Metal has grown to be the largest firm in the tube-making field. His developing and perfecting new uses of aluminum won him an award from the State of Arkansas for doing the most for the aluminum industry. Arkansas is one of the largest producers of bauxite, the raw material for the white metal.

He has also guided his company's entry into the consumer field. Victor's production of metal furniture for inside the home was considered daring by many in the furniture field, but "Varazinu," the trade name, caught on like wildfire.

Mr. Muscat has also penetrated into the chemical fertilizer field. His purchase of the Glorion Co., fer-

(*Continued on Next Page*)

Builders Sheet Metal Works, Inc., Adds Small Production Cold Filler to Complete Line of Lab Equipment

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Box 143 Aerosol Age

Glass Controversy

(*From Page* 16)

tetrafluorodichloroethane can be employed in certain fillings.

THE criticism against the inefficiency of my drop-test data has already been dealt with. I am really surprised that a statistical argument is used against me. Surely it is abundantly clear from my original paper that I was not attempting to tell people how to develop a drop-test technique. I was rather passing on the results of tests confirmed time and time again which indicate that an uncoated glass aerosol if dropped and broken, constitutes a hazard to the public.

I chose 6'6" for my drop-tests because at that height the bottle is almost certain to break, and I wanted to have that explosion recorded by way of a photograph. I hope no one will assume that those same bottles would not have broken from a lower height. At 5'6" the bottles may or may not have broken every time. Had I used four feet, as has been suggested in certain American papers, I may have recorded only one break in every 12 or 18 drops. Personally, I would have expected higher breaking figures (judged on my own experiences) but this is not a significant point. When one deals with human beings one does not minimize the danger possibilities, but rather should magnify them. In other words, the worst circumstances that might arise are estimated and then something is added for extra safety. Is it really beyond the bounds of possibilities that an aerosol bottle could be dropped or knocked from a height in excess of four feet? A child, of course, might even be tempted to hurl the bottle.

On the subject of statistics, it might be worth while to consider normal laboratory experimental techniques. If a technician undertakes an experiment which is a complete failure, he will certainly repeat that experiment at least once. How many times would he repeat that test before he was satisfied that his experiment had failed? No statistical calculations would be required for him to arrive at the obvious conclusion. He will, of course, vary his conditions until he eventually achieves success, but you must not confuse the simple issue in my paper with statistics.

Who's Who

(*From Page* 51)

tilizer producer, was another step in the diversification of the Muscat enterprises.

Victor Muscat strongly believes that "aluminum stands on the threshold of a new era, with a tremendous new market within its grasp. Its use in the making of cans and aerosols cannot be overemphasized!" As head of Victor Metal Products Corp., Mr. Muscat feels he is in the forefront of this packaging and merchandising revolution.

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Mrs. Wiener says "Analysis of results of many thousands of bottles dropped, according to particularized instruction in collaborating American laboratories, proves the need for a reproducible, scientific statistical procedure for testing. Only after obtaining exhaustive statistical data can a true conclusion be drawn and standard methods of drop-testing be developed." Does this mean that not all the tests undertaken have proved that uncoated glass aerosols are safe?

She then admits that flying glass fragments constitute a potential hazard to the customer, but that this fact cannot serve as a criterion for elimination of uncoated glass aerosols from the market. Now please note the following, quoted from the article. "If sufficient care is exercised in the development of suitable formulations and in the manufacture of appropriately designed and well annealed bottles of adequate thickness, the uncoated aerosol bottles may be regarded as *relatively* safe." The italics are, of course, my own. Safe, relative to what? Isn't this the whole point; the bottles under discussion are only relatively safe and one can so easily eliminate the word "relatively" by using a coated bottle.

This is the first of two parts of Mr. Pickthall's article. The conclusion, and another article by Mrs. Wiener, will appear in the December issue. Publication of Mr. Pickthall's article in no way constitutes an editorial position, but instead is aimed at giving both sides an opportunity to state their respective positions. — *The Editor*

Aerosols in Review

(*From Page* 32)

which to needle the steel makers.

"Also, aluminum offers some genuine advantages as a can-making metal—from the standpoint of product protection, weight, printing, and merchandising appeal."

The article terms as Victor Metals' "biggest gun" its "exceptionally" low price on the basic stock for impact extrusion — the aluminum slug. "Where most suppliers are quoting a price of 46 cents a pound for the slug used in impact extrusion, this company claims to be able to sell it —at a profit—for 36 cents. Obviously then, the slugs will be even cheaper for Victor's own can lines.

Continental Can is reported to be making its prototype containers in drawn and three-piece models, as well as by impact extrusion. Kaiser, on the other hand, will use the deep drawing technique.★

Insect Repellents

(*From Page* 18)

salt-marsh mosquitoes, until a confirmed bite was received.

Against yellow fever mosquitoes the aerosols and pressurized sprays were about equal to the solution, all giving average protection periods of five to seven hours in several series of tests. However, in tests against the salt-marsh mosquitoes the solution was superior to the pressurized sprays, and the aerosols were least effective, with average protection periods of about five, four, and three and a half, hours respectively.

Gilbert[1] found that pressurized sprays were about equal to ethanol solutions of diethyl toluamide for skin applications in tests against other mosquitoes, *Aedes dorsalis* (Meig.), in Oregon.

Commercial pressurized products containing 10, 15, or 20% of diethyl toluamide or 20% of ethyl hexanediol were tested as applications to shirts for protection against salt-marsh mosquitoes. Since these tests were to determine the period of protection that might be expected in practical use, each shirt was treated with 64 grams of spray (the average amount applied by sportsmen asked to treat a shirt in preparation for a fishing trip). The treated shirts were worn for eight hours a day on successive days and were tested for 30 minutes each day in areas where salt-marsh mosquitoes were abundant. The actual wear withstood before any bites through the shirts were received averaged 18 hours with 20% of diethyl toluamide and between

[1]Gilbert, I. H. 1957. Evaluation of repellents against mosquitoes and deer flies in Oregon. Jour. Econ. Ent. 50: 46-48.

four and five hours with 10 and 15% of diethyl toluamide and 20% of ethyl hexanediol.

Returning to our original question with the foregoing results, we find that repellent aerosols, including pressurized sprays with coarser droplets than true aerosols, *do* provide satisfactory individual protection against insect attack. The degree of protection is comparable to that obtained with the same amount of repellent applied by other means. Aerosols are easy to apply and eliminate the possibility of spillage. They are satisfactory for applying repellents to the skin, especially convenient for the treatment of clothing, and have the greatest advantage when formulated with repellents that can be used for both purposes.★

The Gattone Patent

(*From Page* 21)

parent, for example, to use the same a can of medicament, oxygen, for example, is coupled to the mask inlet nipple and the mask opened up and placed over the mouth and nose of the user. Then when inhaling the user simultaneously moves the tube 11 to displace the valve head 27 and permit flow of oxygen from the container 12 into valve openings 28, through the tube 11 into the mask where it mixes with air drawn in through the valve openings 19 into mask outlet chamber 17.

Promptly following the inhalation period the user releases manual pressure on the tube 11 and the valves 20 and 27 close during exhalation, while the valves 22 open for discharge of carbon dioxide therefrom. The container 12 may contain enough oxygen for approximately ten minutes of use after which the first container may be discarded and another promptly coupled to the mask.

Thus, there is provided a simple, economical pocket size apparatus for use of medicaments heretofore requiring bulky and complex apparatus for effective use.

In Figure 3, is illustrated another form of exhalation valve plate, wherein the valve openings 19 are positioned nearer the center of the same. The positions and number of openings may be varied as required for various types of medicaments.

Although only two embodiments of the invention have been illustrated and described in detail, it is to be expressly understood that the invention is not limited thereto. Various changes may be made in the design and arrangement without departing from the spirit and scope of the invention, as will now likely occur to others skilled in the art. For a definition of the limits of the invention, reference should be had to the appended claims.

What is claimed is:

1. Means for supplying medicament from a pressurized container into the respiratory system of the human body, said means comprising a mask having an air inhalation valve means, an exhalation valve means, a medicament inlet having the bore formed with an annular coupling ring, and manually opened and pressure closed valve means in said container having a tubular extension with an exterior groove adapted to receive the said coupling ring of said mask inlet.

2. Means for supplying medicament from a pressurized container into the respiratory system of the human body, said means comprising a mask having an air inhalation valve means, an exhalation valve means, a medicament inlet, and manually opened and pressure closed valve means in said container coupled to said mask inlet, said valve means comprising a head formed from an elongated tube with openings adjacent said head, said tube being mounted in the bore of a resiliently yieldable member sealed in the top of said container.

3. A pocket size apparatus for administering pressurized medicaments comprising a facial mask having a medicament intake nipple, air inlet valve means responsive to inhalation, and exhalation valve means responsive to exhalation, said intake nipple comprising a resiliently yieldable formation with a bore, said bore including a snap on coupling element, and pressurized container formed with pressure closed valve means, said valve means including an elongated tube formed with a coupling element adapted to detachably interfit with said coupling element in the mask intake nipple.

4. The pocket size apparatus described in claim 3 wherein said valve means comprise a head on the end of said tube with outlet openings formed in the wall of the tube adjacent the said head, the lower portion of said tube above the said head and said tube outlet openings being sealed within the bore of a rubber grommet, said grommet having a reduced bore portion with an enlarged portion inside the container spaced around the said tube outlet openings, and manual means for moving said valve head to expose said tube outlet openings to the interior of the container.

5. In a pressurized container with a top portion, a valve means in the top portion comprising a yieldably resilient valve seat including a rubber grommet with a bore, said bore having a relatively larger counter bore within the container, a tube sealed in said bore, said tube having a head portion relatively larger than said counter bore and being seated on the peripheral rim surface over said counter bore, and valve openings formed in said tube adjacent the valve head inside the counter bore, said valve seat being displaceable from the valve head by manual pressure on said tube, said grommet being sealed within a retainer ring, and said exterior of said ring being brazed in the top portion of the said container.

6. In combination, means so shaped and so proportioned as to conform to an oral cavity of the body of a user for administering the gaseous content of a pressurized container by inhalation therapy and a pocket size dispensable container for holding said gaseous content; said means having a detachable coupling connection, and said container having a coupling connection adapted to cooperatively connect with said detachable coupling of said administering means, said container having an opening in a wall thereof, a valve seat mounted in the opening, a valve engageable with said seat by the pressure in the container, a valve stem movable axially and connected to said valve, and manually engageable valve operator means fixed to a medial part of said axially movable valve stem, whereby the gaseous content of the container by axial movement of said stem releases and administers the gaseous content of said container by inhalation therapy when maintaining the said gaseous administering means adjacent the face of a user, while said stem is moved axially and said valve is held open by said manual valve operator means.★

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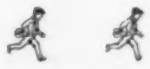

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New Aerosol Patents

The data listed below is only a brief review of recent patents pertinent to the readers and subscribers of this publication.

Complete copies of these patents may be obtained by writing to the publisher of this magazine, Aerosol Publications, Box 31, Caldwell, N. J., and remitting 50c for each copy desired. For orders received outside of the United States the cost will be $1.00 per copy.

2,805,003. VALVE ASSEMBLY FOR AEROSOL TYPE CONTAINERS. Patent issued Sept. 3 to John E. Ayres, Springfield, N. J. assignor by direct and mesne assignments to Oil Equipment Laboratories, Inc., Elizabeth, N. J., a corporation of New Jersey.

In a valve assembly for a pressurized container wherein the top of the container has an opening therein with upstanding side walls extending around said opening and an annular flange extending inwardly and downwardly from said side walls and defining said opening, said flange forming a valve seat, the improvement which comprises a valve member of a material which is stretchable and compressible, said valve member having an outer edge and a solid central portion with at least one aperture located between its outer edge and its solid central portion and a retaining member of rigid material frictionally engaging with upstanding side walls extending around an opening in the top of a container, said retaining member also engaging with and holding the outer edge of the valve member in a fixed position relative to said side walls with the solid central portion of said valve member in engagement with the lower end of an annular flange extending inwardly and downwardly from said side walls and defining the opening in the container.

2,805,033. CARTON DISPLAY HOLDER FOR CANS OR THE LIKE. Patent issued Sept. 3 to Ben Rous, Brooklyn, N. Y., assignor to Federal Carton Corp., North Bergen, N. J., a corporation of New York.

A display card for end-beaded cans and the like, said card being adapted to be formed from a single generally rectangular blank of stiff sheet material, said blank being divided by transverse score lines into a first panel at a first end of the blank, a second panel hingedly connected along a first score line to said first panel, a third panel hingedly connected along a second score line to said second panel, a fourth panel hingedly connected along a third score line to said third panel, and a fifth panel at the other end of the blank hingedly connected along a fourth score line to said fourth panel, said card being assembled with said fifth panel superimposed upon and fixed to said first panel, said fourth score line being disposed intermediate the first end of the blank and the first score line, the distance between the fourth score line and the first score line plus the length of the second panel being equal to the combined lengths of the third and fourth panels, whereby the card may be maintained in flat condition with the third and fourth panels superimposed upon the first and second panels, said card being adapted to be erected with said second panel extending substantially perpendicularly to said first panel, said fourth panel having an aperture through which an end-beaded can may extend, said aperture extending to and interrupting said fourth score line, said second score line having a slot for reception of one end-bead of the scan and said first panel having a tab for reception within the other end-bead of the can to hold the card in erected condition and to hold the can to said card, said fifth panel having a further tab connected thereto along the interrupted portion of said score line, said further tab being superimposed upon said first panel and extending almost to the first score line, whereby the free transverse edge of said further tab is adapted to engage the first end-bead of the can.

2,805,671. AEROSOL FILTERS. Patent issued Sept. 10 to Edward J. Hackney, Charles D. Faucette, and Frederick R. Darkis, Durham, N. C., assignors to Liggett & Myers Tobacco Co., New York, N. Y., a corporation of New Jersey.

An aerosol tobacco smoke filter comprising a compact bundle of textile filaments disposed generally parallel to the direction of gas-flow through the filter, a multiplicity of rod-like fibers of diameter not exceeding about 40 microns or the diameter of the filaments whichever is less, each thereof being secured adjacent one of its ends to a peripheral surface of one of said filaments with its other end extending generally at right angles to the direction of gas-flow through the filter, said filaments being in proximate contiguous relation having gas-flow passage spaces therebetween in longitudinal relation with and generally paralleling said filaments and said rod-like fibers extending across said passage spaces in multiple spaced relation along the longitudinal extent of said passage spaces, and means to enclose the sides of the bundle.

2,806,739. VALVE AND REMOVABLE SPRAY HEAD THEREFOR. Patent issued Sept. 17 to Leonard R. Drell, Glencoe, Ill., assignor to DeMert & Doughery, Inc., a corporation of Illinois.

A valve for pressurized containers comprising a housing having a restricted inlet at the bottom and an outlet at the top, an annular gasket in said housing adjacent said outlet, a sealing means below said gasket, said sealing means having an

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annular rim and a depending cup, a trough in said cup, means normally acting against said sealing means to press said rim into sealing relationship with said gasket and thereby close the said outlet, a spray head having a depending tube passing through the opening in said gasket and being seated on said cup over said trough, the external diameter of said tube being less than the internal diameter of said cup and the length of said trough, said tube having a meter hole in its bottom wall normally positioned over said trough, said spray head having a restricted discharge orifice, the area between said restricted inlet and said meter hole constituting a first expansion chamber, the area between said meter hole and said restricted discharge orifice constituting a second expansion chamber, whereby downward movement of said spray head forces said tube against said sealing means and thereby moves it and said annual rim out of sealing engagement with said gasket to provide communication between said first and second expansion chambers.

2,807,504. NEBULIZATION APPARATUS. Patent issued Sept. 24 to Allan P. Bloxsom, Houston, Tex.

A nebulizing apparatus comprising a substantially airtight primary reservoir, a secondary reservoir disposed below the primary reservoir, a first tube extending from the upper portion of the primary reservoir into the lower portion of the secondary reservoir and a second tube extending from the lower portion of the primary reservoir into the lower portion f the secondary reservoir whereby a constant liquid level is prvided substantially at the lower portion of the first tube, a nebulizing tube extending into the secondary rescrvoir and having its discharge end above the liquid level, a third tube tapering upwardly and having a small opening at its upper end proximate the discharge end of the nebulizing tube, the lower end of the third tube extending downwardly below the liquid level whereby gas passing out the discharge end of said nebulizing tube effects flow of liquid in said third tube and nebulization thereof, such flow of liquid lowering momentarily the liquid level and thereby permitting gas to pass upwardly in said first tube into said primary reservoir and thereby permitting liquid to flow by gravity in said second tube downwardlv into said secondary reservoir to bring said liquid level up to the lower portion of said first tube, inlet means connected to the nebulizing tube for flow of gas thereinto, and outlet means connected to said secondary reservoir above the liquid level for flow of nebulized particles therefrom.

Trade Mark Applications

Applications for registration of the following trademarks were published in recent issues of the *Official Gazette* of the U. S. Patent Office. In not all cases are there strictly aerosol trademarks, however many of the products listed below come within the category of those for which a possible future use in aerosols is foreseen.

WINK, in lined upper and lower case letters with winking figure over "i", for insect killer, pet spray, roach and ant spray, moth proofer, air freshener, fire extinguisher, rose, plant, and garden spray, to Copley of Boston, Inc., Boston. Filed June 6, 1955 with first use claimed April 1, 1956.

TIZ-BLACK MIST, in capitals, for color rinse and hair conditioning preparation. Filed May 8, 1956 by M. Peter Co., Inc., Crystal Lake, Ill., with first use claimed Sept. 8, 1954.

TWEED, in capitals, for plastic spray coatings. Filed Dec. 24, 1956 by Raffi and Swanson, Inc., Wilmington, Mass. First use claimed March 26, 1954.

DID, for combined cleaners and polishers for automotive and household use. Filed Oct. 5, 1956 by The First Silicone Corp., Chicago, Ill. with first use Feb. 1, 1956.

COLOR TOUCH, in solid capitals, for hair coloring, to Nestle-Lemur Co., New York. Trademark filed Aug. 24, 1956 after first use Jan. 24, 1939.

LANO-WAX, in capitals, for liquid shoe polish. Filed Mar. 25, 1957 by Knomark Manufacturing Co., Inc., Brooklyn, N. Y., which claims first use Jan. 2 of same year.

ALL'S FAIR, for cologne, cosmetic facial and body creams, cosmetic facial and body lotions, lipstick, rouge, facial and body powders, facial lotion and liquid used as a foundation base and also as a powder substitute, personal deodorant, hair conditioning cream and lotion, hair dressing cream and lotion, and hair tonic. Filed March 12 by Chesebrough-Ponds Inc., New York, N. Y., claiming first use Jan. 15.

TRIC, in capitals, for personal body deodorant. Filed Dec. 11, 1956 by Bristol-Myers Co., New York, N. Y., with first use claimed for Aug. 7, 1956.

BEAUTY ON A BUDGET, in quotes, forming an arc over a pair of scissors, for hair spray, wave set for hair, permanent wave solution, and instant cream neutralizers. Filed April 5, by Cut & Curl, Inc., Hempstead, N. Y., with first use Feb. 14, 1956.

BRITE-IZE, in unfilled capitals, for lens cleaner. Filed Dec. 24, 1956 by Barnett Copeland, d.b.a. Brit-ize Co., Chicago, Ill., claiming first use in the spring of 1933.

PETASOL, for animal insecticides including a flea killer, a dry bath shampoo, an animal repellent, and an odor killer. Filed March 24 by Virginia Smelting Co., West Norfolk, Va., which claims first use Nov. 23, 1956.

FALLING IN LOVE, for colognes. Filed March 8 by Avon Products, Inc., New York, with first use March 5 of same year.

MOTH SNOW, for moth-proofing preparation. Filed June 21, 1956 by National Associates, New Bedford, Mass., with first use May 5 of same year.

TEENAGER COSMETICS, in script, on a striped oval background, for toilet water. Filed Nov. 28, 1955 by Teenager Cosmetics, Inc., Hollywood, Calif., claiming first use July 19 of that year.

LIQUI-CHAIN, for sprayable abrasive-bearing substance for imparting anti-skid properties to surfaces. Same information and filing and use dates as above.

DRESSET, in capitals and lower case script, for hair setting preparation. Filed March 21, 1956 by Turner Hall Corp., New York, N. Y., with first use Feb. 27, 1956.

FRENCH MIST, in a circle of lace, for floral fragrance to be sprayed in enclosures and on apparel, linens, and furnishings. Filed July 18, 1956 by Strouse, Inc., Norristown, Pa., claiming first use April 11 of that year.

BAG BEAUTY, for spray for protecting, restoring, and enhancing the appearance of handbags. Filed Dec. 6, 1956 by Knomark Manufacturing Co., Brooklyn, which claims first use Aug. 1955.

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As We Go to Press . . .
AT Appoints Sam Prussin

Aerosol Techniques, Inc., Bridgeport, has announced the appointment of Sam Prussin as director of new products and sales development. Mr. Prussin comes to Aerosol Techniques from the Rexall Drug Co., Los Angeles, where he had been associate director of research and product development for the past eight years. He will direct and coordinate an expanding program of new product formulation and marketing research in the company's established line, as well as in the newly-initiated nitrogen propellant division.

•

OM Consolidates Offices

Olin Mathieson Chemical Corp., New York, has moved its northeast sales office to consolidate operations with the firm's Industrial Chemicals Division. The Insecticide Products Dept. of Olin Mathieson will henceforth be located at 745 Fifth Avenue, New York 22.

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Powr-Pak Appoints Elmi

Steele Elmi has been appointed technical director of cosmetics and household specialties by Powr-Pak, Inc., Bridgeport custom filler. He will head a group working on research and development of aerosol cosmetic products and will also handle customer technical service in the formulation and compounding of these products.

Prior to his Powr-Pak appointment, Mr. Elmi was with the technical service department of General Chemical Division of Allied Chemical & Dye Corp. at Edgewater, N.J. He is well known for his development of Poly (VP/VA) copolymers for use with hair sprays and protective films in aerosol containers.

Aerosol bouquets

that have proved their effectiveness in the production of industrial and consumer products

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OIL BOUQUET E.T. No. 3126
OIL BOUQUET P.C. No. 3127
OIL BOUQUET H.D. No. 3128
OIL BOUQUET K.L. No. 3129
OIL BOUQUET H.C.S. No. 3130

From the Research Laboratories of

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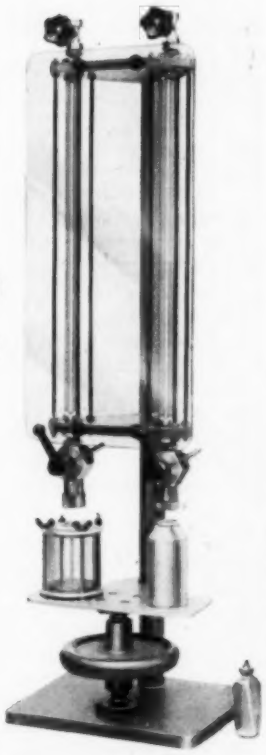

Laboratory Filling Apparatus — DP-101

All Products manufactured to our own Designs, Formulations and Patents. Valves available from Germany and Italy—Filling Machines from Germany—Laboratory Equipment and Concentrates from Switzerland.

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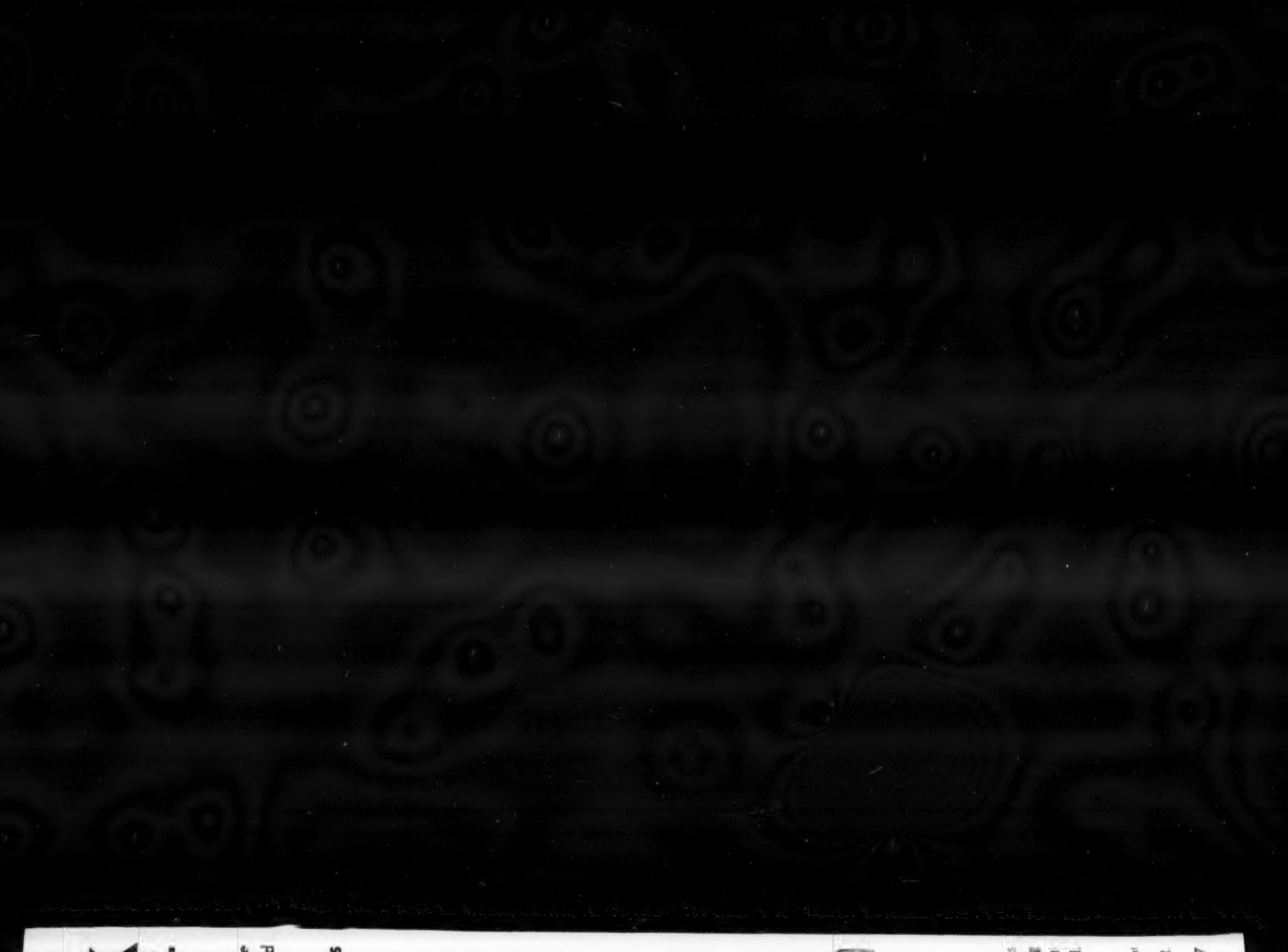
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